

VISIT...

LANZAROTE
Caliente.COM

All About Life and Death

A Basic Dictionary of Life and Death
Volume One

by Cho Chikun, Honinbo

Translated by Bruce Olson

The Ishi Press
Tokyo, San Jose, London

Contents

Volume One

Preface

Index

Explanatory Notes for Using this Book

Glossary

Part One

Life and Death on the Second Line

Part Two

Six-Spare Eye Shapes in the Corner

Part Three

Eight-Space Eye Groups in the Corner

Part Four

The Comb Patterns

Volume Two

Part Five

The Carpenter's Square

Part Six

Second Line Shapes on the Side

Part Seven

Third Line Shapes on the Side

Part Eight

Fourth Line Shapes on the Side

Part Nine: Practical Applications

The Star Point and the 3-3 point

Part Ten: Practical Applications

Various Ways of Invading

Preface

These two volumes are a collection, in dictionary format, of shapes from the basic to the practical, in which the issue is the life or death of the groups involved. While it is presented in a problem format, you shouldn't feel compelled to use it like you would a book on tsume-go (life-and-death problems), wrestling with every problem from beginning to end. On the contrary, this book is better suited to skipping lightly from place to place as the mood strikes you or as your needs require. For example, both leafing through the book, stopping to carefully study only those shapes which interest you, or going directly to the solution diagram without working through the problem, are excellent ways to use this book. In fact, my fondest wish would be for you to keep the book on your bedside table and fall asleep while looking over a page or two. The objective of this book is to have you gradually, yet painlessly acquire an appreciation for a basic approach to the problem of life and death in go.

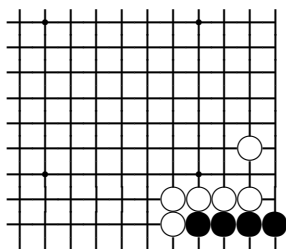
In anything, the fundamentals are important; if you neglect them your performance will surely suffer. For example, the very first pattern in this text utilizes the three-space nakade (large eye inside a group) shape. Since all life and death problems in go boil down to a question of one eye or two, this shape must be considered the most basic. If you are able to learn to think about problems of your own as a question of 'How can I reduce this to the three-in-a-row shape?' and then compare this to the time when you didn't think about a problem in that way, you'll be able to see that you've made significant progress.

September, 1984

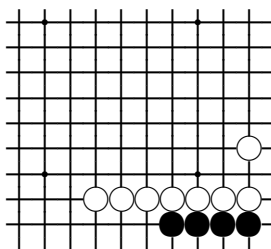
Cho Chikun

Index for Volume One

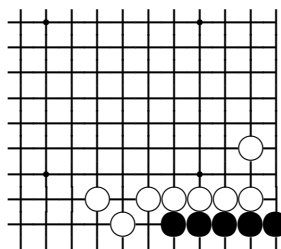
Part One: Life and Death on the Second Line



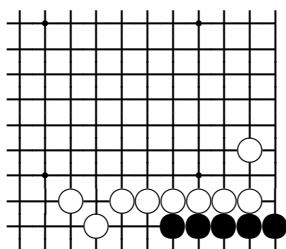
(2)



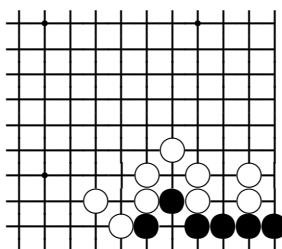
(3)



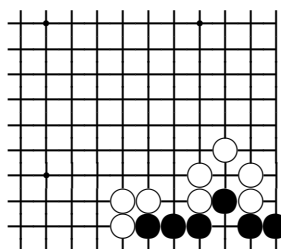
(4)



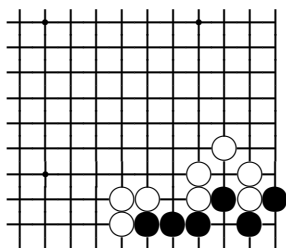
(5)



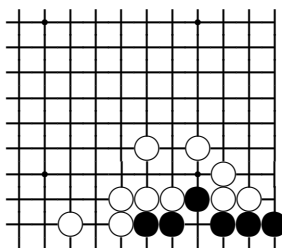
(6)



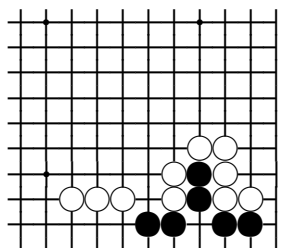
(8)



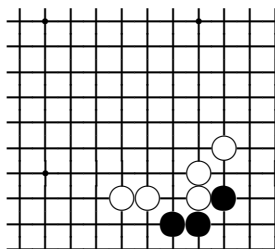
(9)



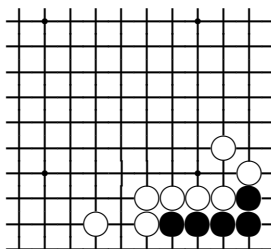
(10)



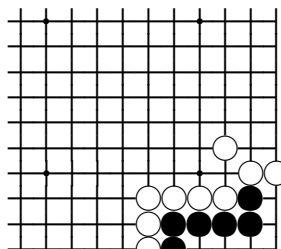
(12)



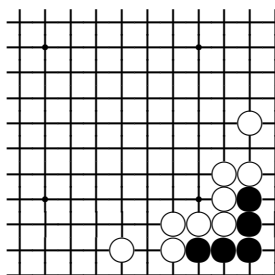
(13)



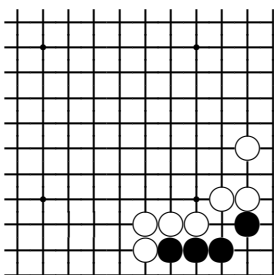
(14)



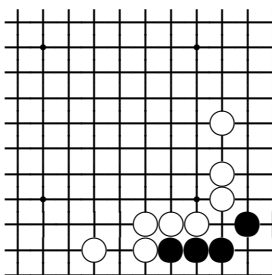
(16)



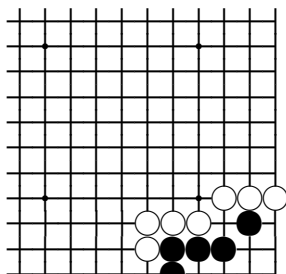
(18)



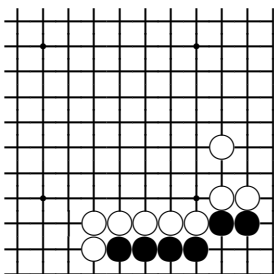
(20)



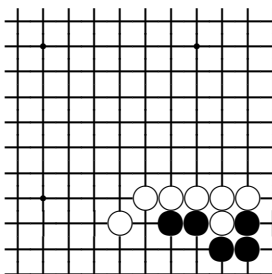
(22)



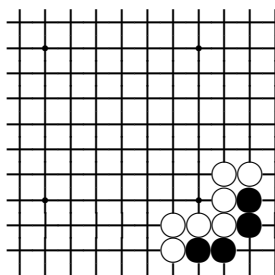
(24)



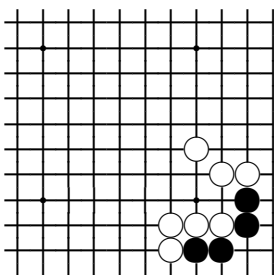
(26)



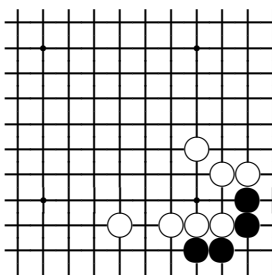
(27)



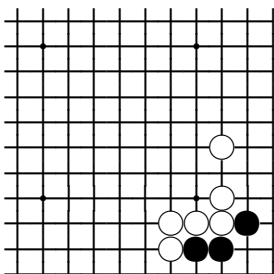
(28)



(29)



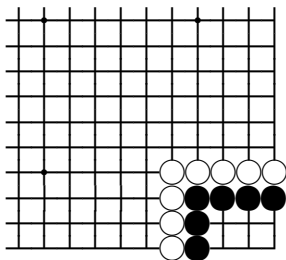
(30)



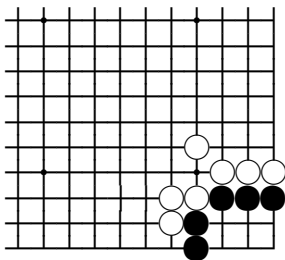
(32)

Part Two

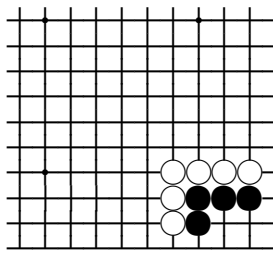
Six-Space Eye Shapes in the Corner



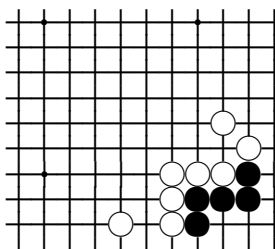
(34)



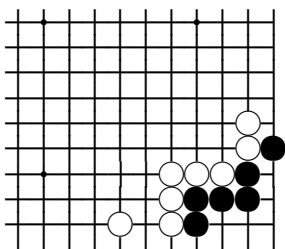
(36)



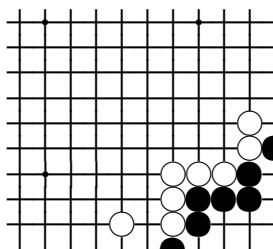
(38)



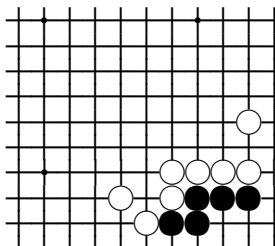
(40)



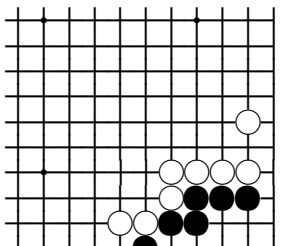
(42)



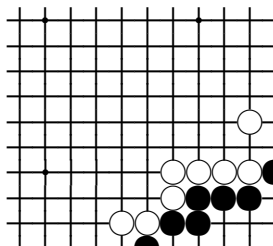
(44)



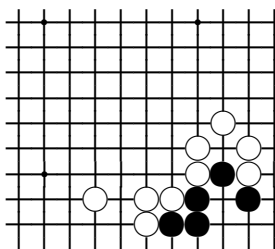
(46)



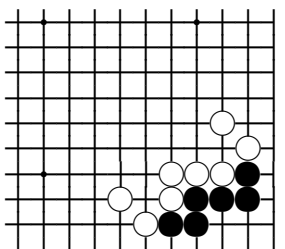
(48)



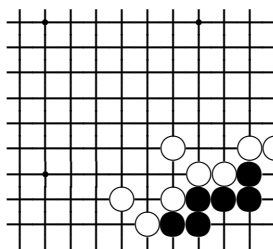
(49)



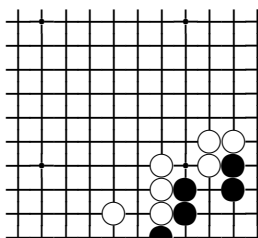
(50)



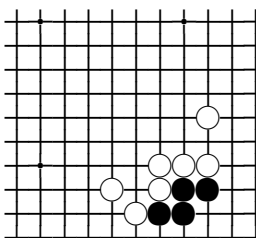
(52)



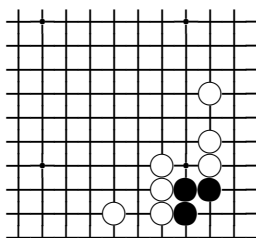
(54)



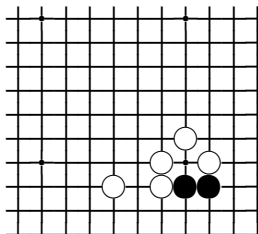
(56)



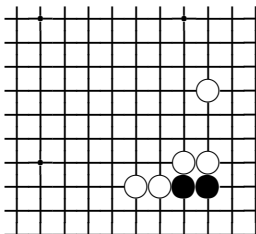
(58)



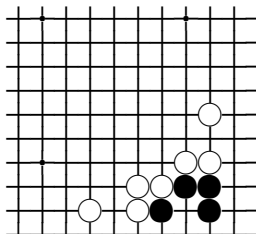
(60)



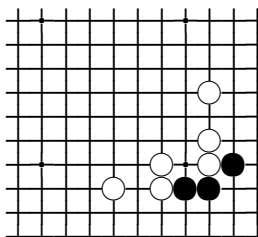
(62)



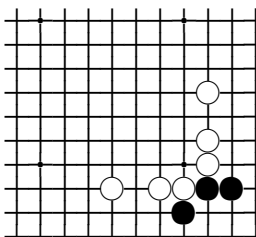
(64)



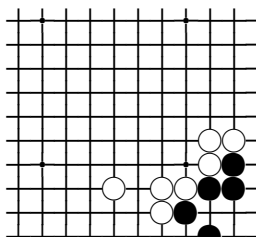
(66)



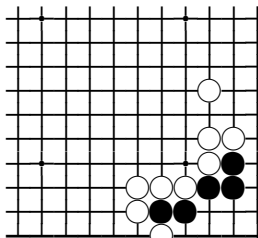
(68)



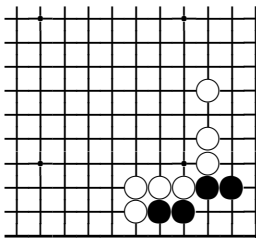
(70)



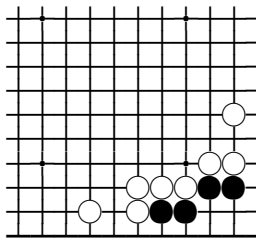
(72)



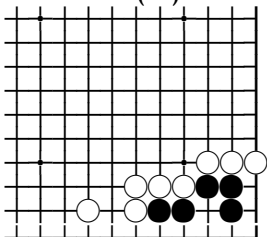
(73)



(74)



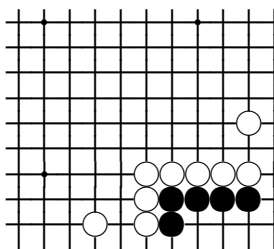
(76)



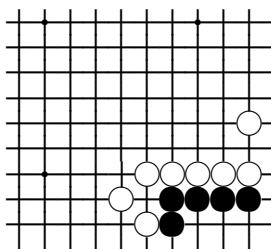
(78)

Part Three

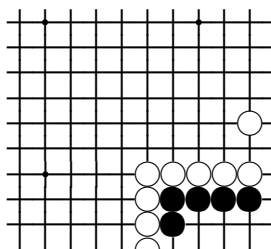
Eight Space Eye Groups in the Corner



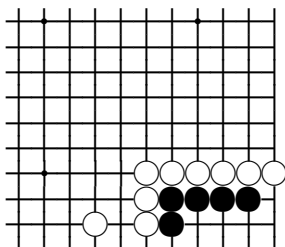
(80)



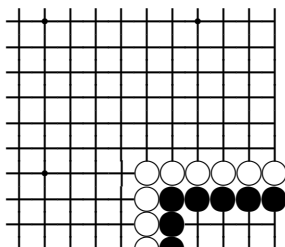
(82)



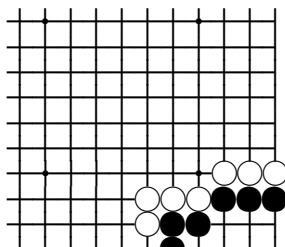
(84)



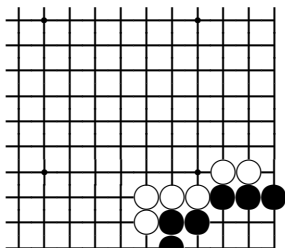
(86)



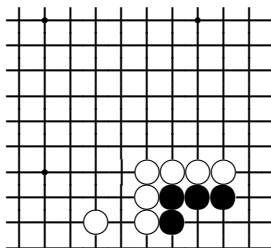
(88)



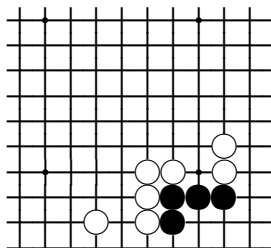
(90)



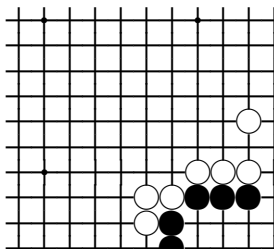
(91)



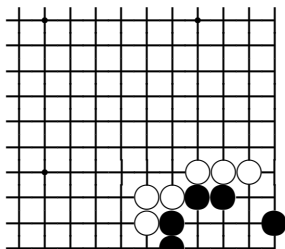
(92)



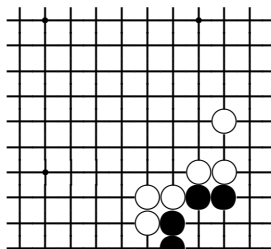
(93)



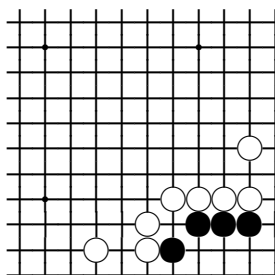
(94)



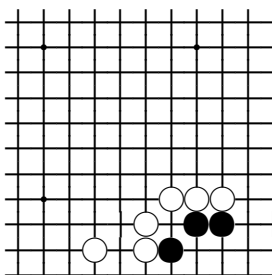
(96)



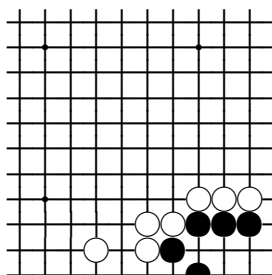
(97)



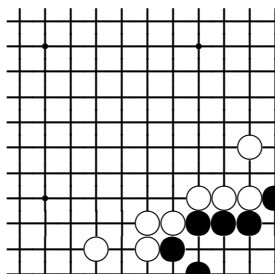
(98)



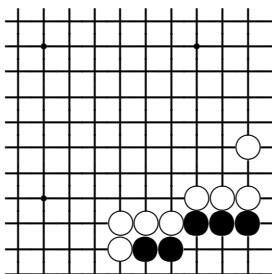
(100)



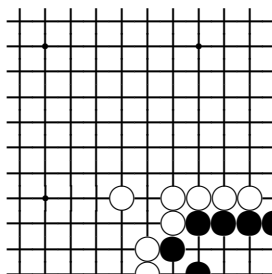
(102)



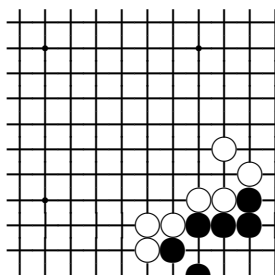
(104)



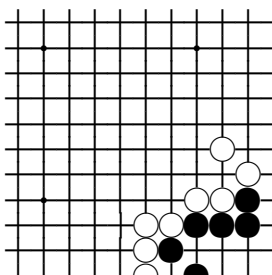
(105)



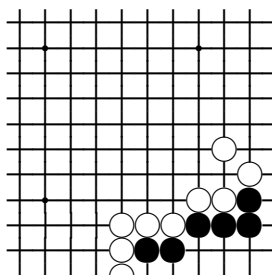
(106)



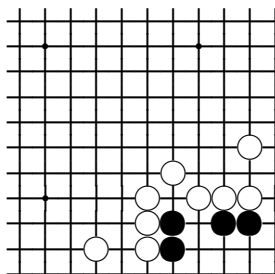
(107)



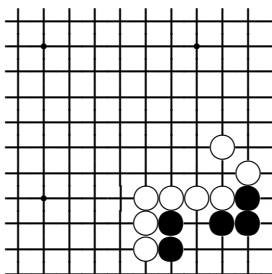
(108)



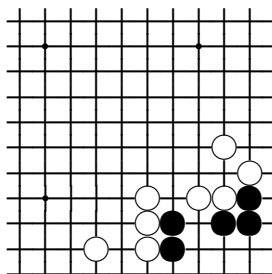
(110)



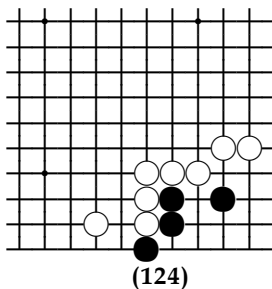
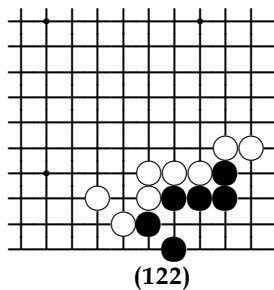
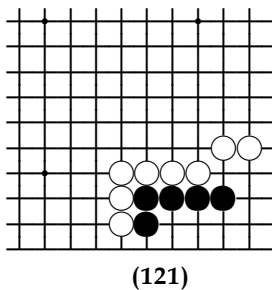
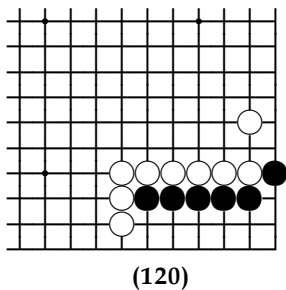
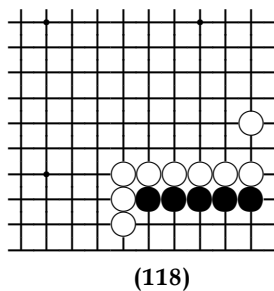
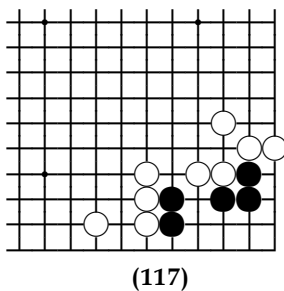
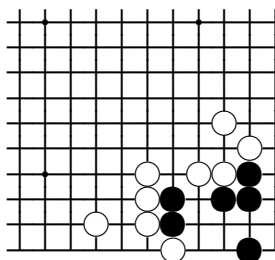
(111)



(112)

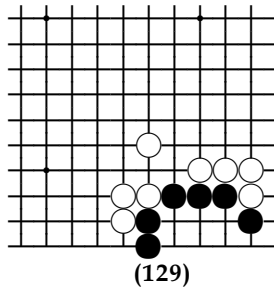
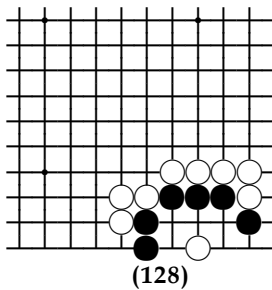
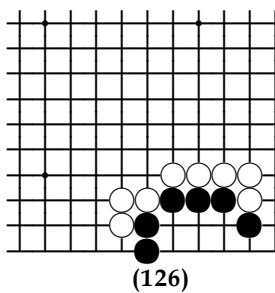


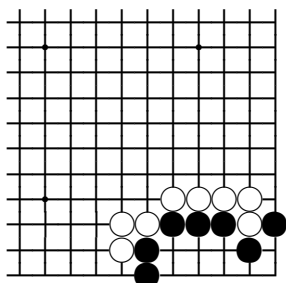
(114)



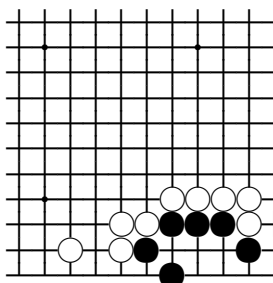
Part Four

The Comb Patterns

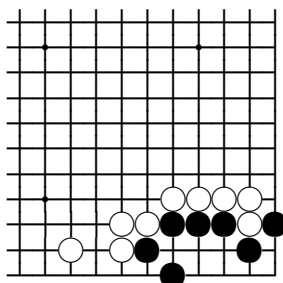




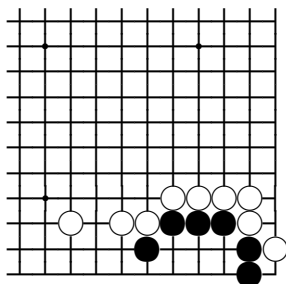
(130)



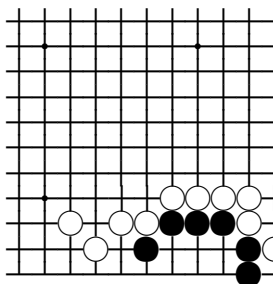
(131)



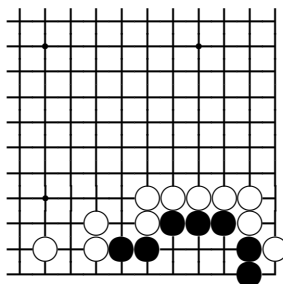
(132)



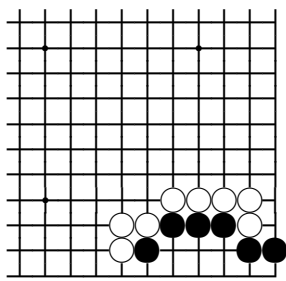
(134)



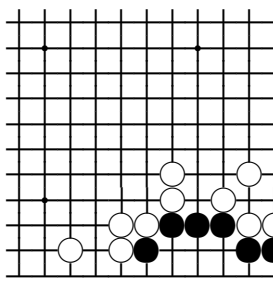
(136)



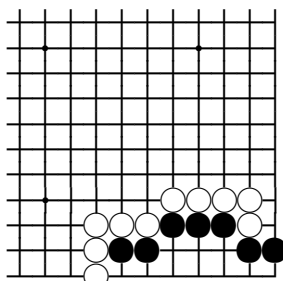
(137)



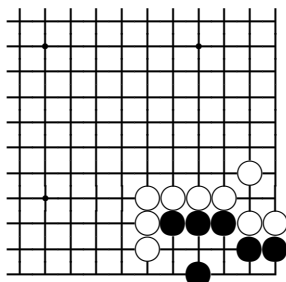
(138)



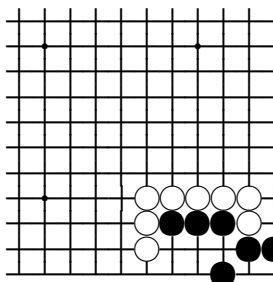
(140)



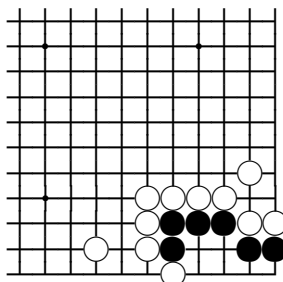
(142)



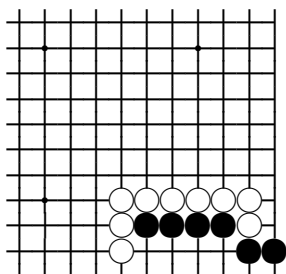
(144)



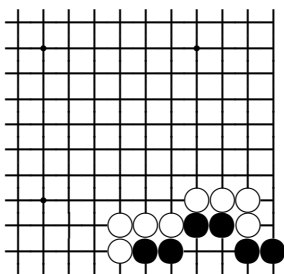
(145)



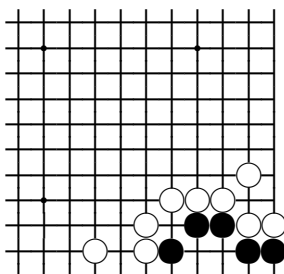
(146)



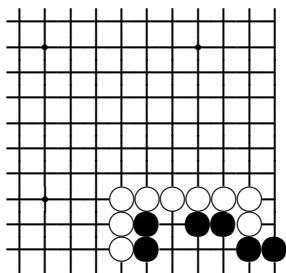
(147)



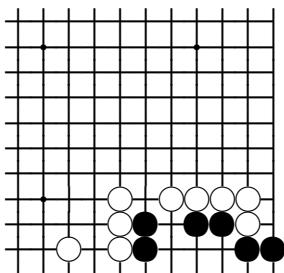
(148)



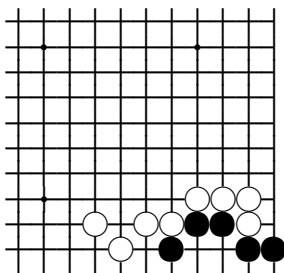
(149)



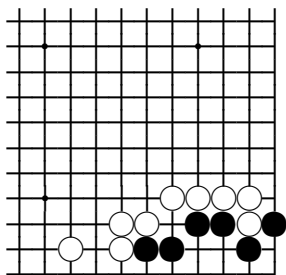
(150)



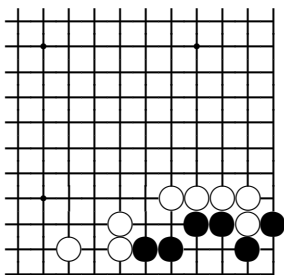
(152)



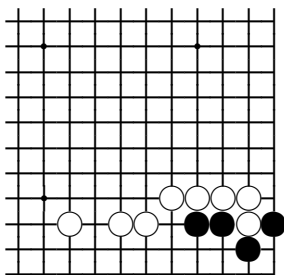
(153)



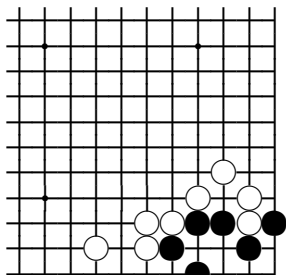
(154)



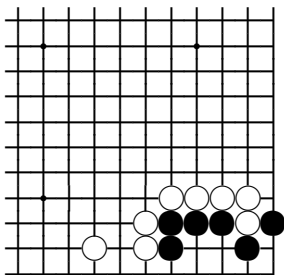
(156)



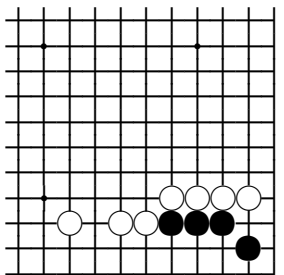
(158)



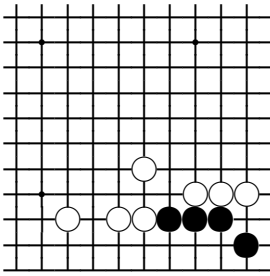
(160)



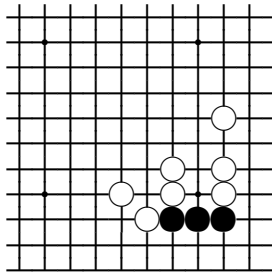
(161)



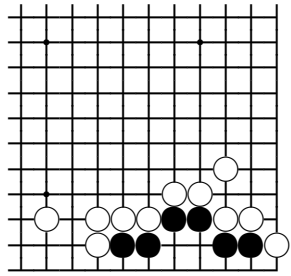
(162)



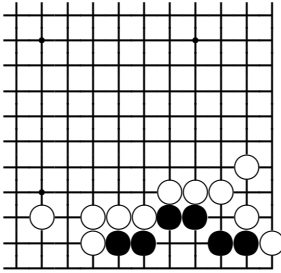
(163)



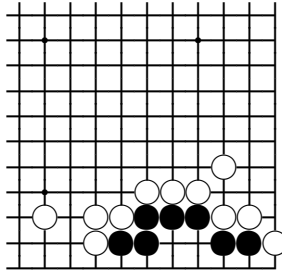
(164)



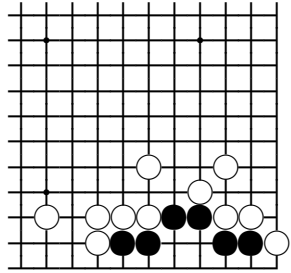
(166)



(167)

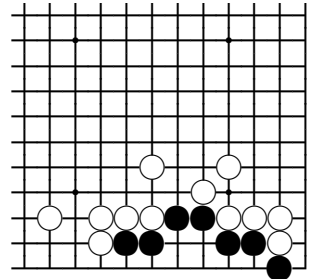


(168)



(169)

Explanatory Notes for Using this Book



(170)

The captions for the diagram explanations provide an indication of the likely solution.

Four different titles are used for the diagrams: Solution, Failure, Variation, and Reference.

When there is more than one possible 'correct' solution, they will appear as Solution 1, Solution 2, etc. (Note: The first solution is usually slightly better based on such things as its impact on the surrounding territory.)

In the diagrams labeled 'Failure' the side with sente (first move) has made a mistake.

In the diagrams labeled 'Variation' the side with gote (last move) has made a mistake.

Diagrams which contain supplemental information are labeled 'Reference'.

When a pattern is labeled 'Black is dead' it means that Black cannot live even if he plays first. When it says 'Black is alive' it means that White cannot kill Black even if White makes the first move.

In those cases where it is stated that 'Black is alive' or 'Black is dead' the associated diagrams are all labeled 'Variation'.

The numbers underneath the diagrams in the Index show the page number where that problem may be found.

Where common Japanese terms are used, the first such usage is followed by a short definition.

Glossary

aji - potential (options, possibilities)

atari - the threat to capture a stone or a group of stones on the next move.

gote - a move not requiring an answer, losing the initiative. Compare *sente*.

hane - a diagonal move played from a friendly stone in contact with an enemy stone.

miai - points of exchange; interchangeable points.

nakade - a big eye.

sente - a move that must be answered or an unacceptable loss will be suffered. Compare *gote*.

tesuji - a skilful tactical move.

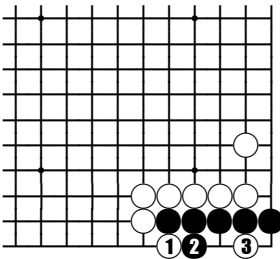
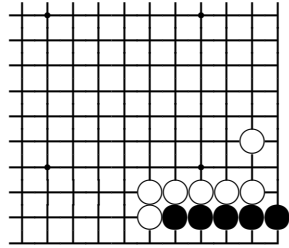
Part One

Life and Death on the Second Line

Pattern 1

White to play, Black dies

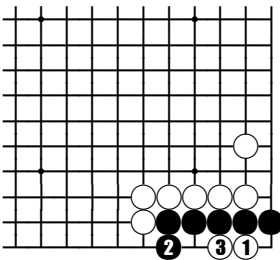
This shape consists of five stones lined up in the corner on the second line. If it is White's turn, Black dies; if it is Black's turn, he can live. This is one of the basic life and death patterns in the corner.



Solution 1

Solution 1. Beginning with a hane

White first plays a hane at 1, then answers Black 2 by playing inside at 3. Playing a stone like this inside your opponents area after narrowing his base is a basic technique for killing stones.

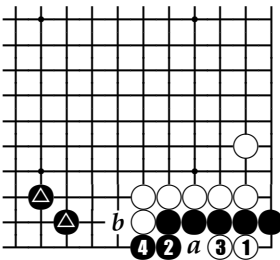


Solution 2

Solution 2. Beginning with a placement

White can also kill the group by beginning with the placement at 1, followed by Black 2 and White 3.

There are, in fact, two routes _ of play, beginning with the hane or the placement. You should take careful note, however, of the difference between these two methods.



Reference

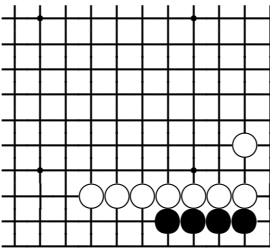
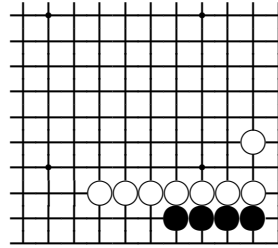
Reference. Connecting to the outside

Suppose that there were black stones in the area of the two marked stones. In that case, after the placement of White 1, followed by Black 2 and White 3, Black would be able to connect to the outside with 4. Therefore, White should play 1 at 2 as in Solution 1. Next, Black must play 'a' and White answers with 1. Now, if Black captures at 4, White 'b' is good enough.

Pattern 2

Black to play and live

This shape differs from the previous one in that Black has not extended all the way to the edge of the board. Should he expand to the right or the left? The situation requires that you exercise some caution.

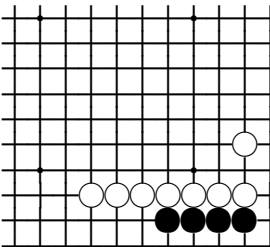


Solution

Solution. Descent is the vital point

Black's descent at 1 is an important play. If White answers at 2, then after Black 3 we return to exactly the same 'living' shape as the previous pattern.

Black's descent at 1 is at the vital point and makes use of the special nature of the corner.

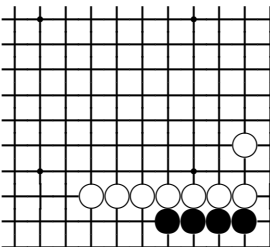


Failure 1

Failure 1. Inadequate space

Crawling to the left with Black 1 is rash. Once White hane at the vital point with 2, Black won't be able to live, even by expanding his area with Black 3 to 5. The sequence continues to White 8.

White must also be careful. If he blocks with White 2 at 3, he misses his chance.



Failure 2

Failure 2. Greedy

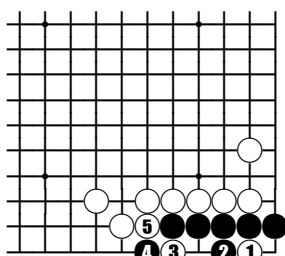
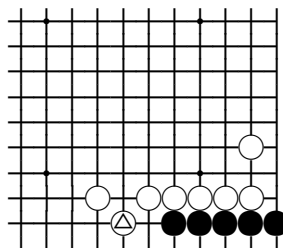
Black's hane at 1 is pointlessly greedy. Because of this, White 2, 4, and 6 lead to a sudden and unexpected death.

Pay particular attention to the fact that the hane at Black 1 versus the descent at 4 makes a one space difference in the width of Black's eye space.

Pattern 3

White to play, Black dies

If the marked White stone were not present Black could play elsewhere and still be alive. However, if it is White's turn, the issue is how to make the marked stone work for him.

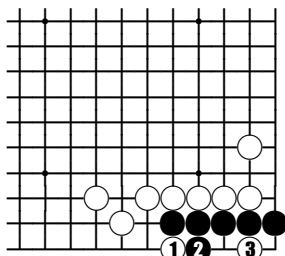


Solution 1

Solution 1. Beginning inside

White 1 is the critical point for interfering with Black's making two eyes. If Black 2, then with the attachment at 3, White can make the left side into a false eye. Should Black descend at 3, White plays inside at 2.

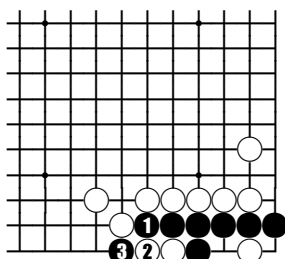
This is not, however, the only possibility for White 1.



Solution 2

Solution 2. From the outside

White can also start by attaching at 1. After Black 2, White 3 inside kills the group. This is not exactly the same technique as in the previous diagram and you need to understand the differences between them. To that end, take heed of the variation in the next diagram.



Solution 3

4: at 2

Solution 3. Dangerous

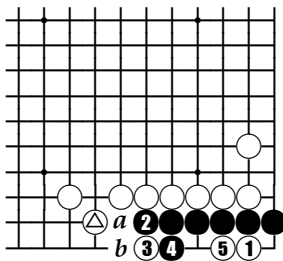
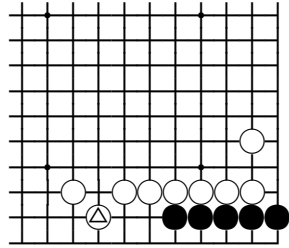
Continuing from the previous diagram, after Black 1, White 2 and 4 ruin Black's second eye. White may feel nervous about having two stones captured, but the follow up throw-in (4) is a standard technique.

Pattern 4

White to play, Black dies

Comparing this to the previous pattern, Black's position is the same. However, the location of the marked white stone has been moved one space further to the left. Even so, if it's White's turn, Black dies.

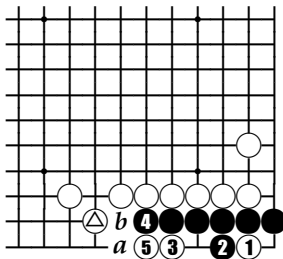
The question is whether to begin on the inside or the outside.



Solution 1

Solution 2. From the inside

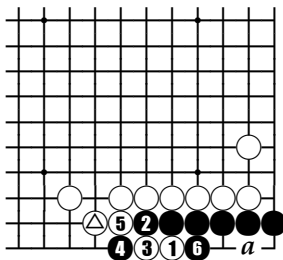
In this shape we are limited to attacking from the inside with White 1. White answers Black 2 with the attachment at 3, then, in response to Black 4, stretches out inside with 5. As you are probably already aware, the continuation of Black 'a', White 'b' does not produce an eye.



Solution 2

Solution 2. The attachment works

After White 1, if Black tries 2, White has the attachment at 3. This is where the influence of the marked stone is demonstrated. Black 4 is answered by White 5, then Black 'a', White 'b' make a shape which leads to a false eye.



Failure

Failure. Wrong order of moves

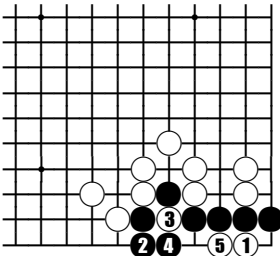
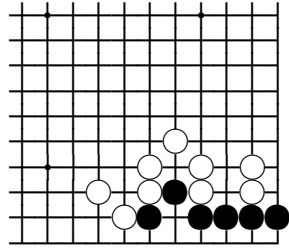
You might think that starting with the attachment at White 1 gives you the same result, but that is not the case. From 2 to 6, Black captures two stones. Next, even if White makes a false eye out of the left side, Black has room to make an eye at 'a'.

Take careful note of the difference between this and starting your attack from the inside.

Pattern 5

White to play, Black dies

There is a defect in the left side of Black's shape. White must figure out how to take advantage of it. The problem is where to make his first move.

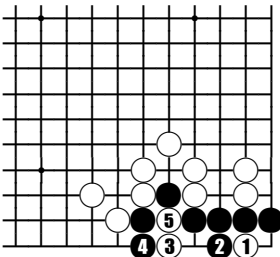


Solution 1

Solution 1. Begin inside

White should begin with 1, which prevents Black from getting two eyes. Even if Black descends at 2 to expand his eye space, the white throw-in at 3 leaves him with only one eye. The sequence ends with White 5.

If Black connects with 2 at 3, White kills him with the hane at 2.

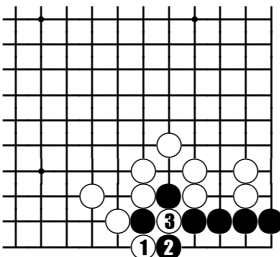


Solution 2

Solution 2. The placement tesuji

After White 1, if Black blocks at 2, the placement at White 3 becomes the tesuji (the best play in the local context). In response to Black 4, White 5 makes a false eye of the left side.

If instead of 3, White carelessly ataris at 4, Black will play at 3. A ko results, making this a failure for White.

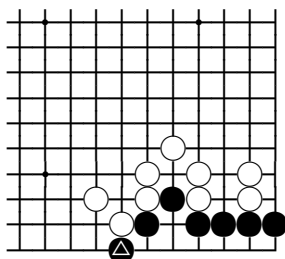


Failure

Failure. Ko

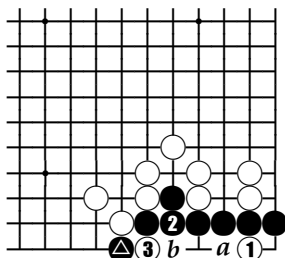
Beginning with the atari at White 1 is rash. Black 2 and White 3 produce a ko. Also, you should verify that if White begins with the placement at 2 instead of 1, Black will block at 1 and live.

Reference 1. Adding a hane



Reference 1

We've added a hane (the marked black stone) to the previous diagram. It appears that Black's situation has improved markedly. However, the fact is nothing has changed. Just like before, if it's White's turn, Black dies.

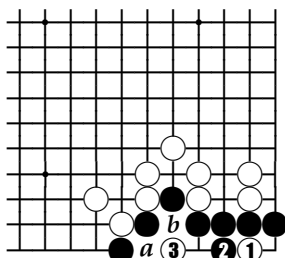


Reference 2

Reference 2. Same idea

Just as before White 1 is good enough. If Black connects at 2, White throws in with 3. If the marked Black stone were not present, White's throw-in at 3 would simply be a hane at 3; regardless, Black is dead. Continuing, next White answers Black 'a' by extending inside to 'b'.

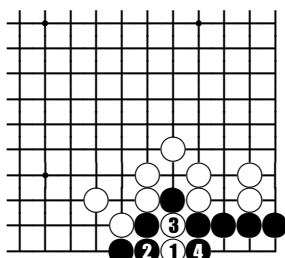
Likewise, should Black play 2 at 3, White plays at 2.



Reference 3

Reference 3. Placement

After White plays 1, if Black blocks at 2, White again makes the placement at 3. Next, if Black 'a', White 'b', or if Black 'b', White 'a'. In either case, it is apparent that Black's hane is useless.



Reference 4

Reference 4. Alive

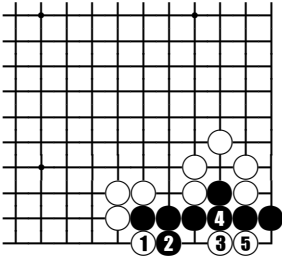
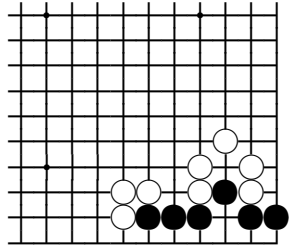
In this case as well, beginning with the placement at White 1 is a mistake. After 4, Black is alive.

Likewise, should White begin by throwing in a stone with White 1 at either 2 or 3, Black gets life after capturing at 1.

Pattern 6

White to play, Black dies

The location of the bulge has shifted to the right side. For White, deciding where to put the first stone in this position can be somewhat troublesome.

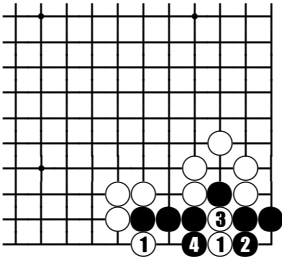


Solution 1

Solution 2. Begin with a hane

In this shape, beginning with the white hane at 1 is correct. If Black blocks at 2, White's play at the vital point of 3 comes immediately to mind. After Black 4 and White 5, Black is dead.

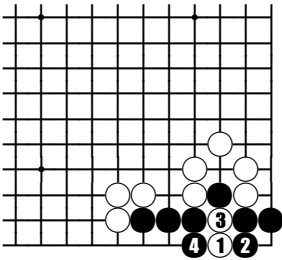
If Black blocks with 4 at 5, it should be apparent that White's insertion at 4 turns this into a false eye.



Solution 2

Solution 2. Throw-in

What about if, after White 1, Black plays at 2, to assure himself of one eye in the corner? In that case the throw-in at 3 works. This makes *miai* of 'a' and 'b': (Black 'a', White 'b' and vice versa) Instead of 3, a white extension to 'b' will also kill Black.



Failure

Failure. Wrong timing

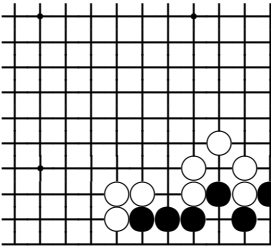
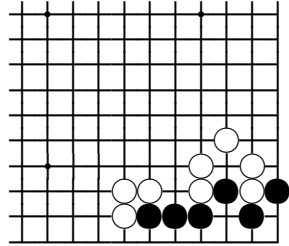
White 1 really looks like the vital point, but playing it immediately fails. Black lives with 2 to 4. He could also live with Black 2 at 3, followed by White 2, Black 'a', White 4: this is *seki*.

The trick is to begin with a hane, then play at the now-obvious vital point.

Pattern 7

Black to live

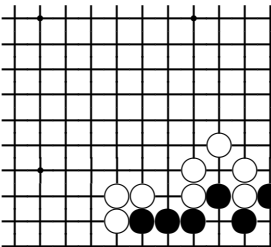
In the corner, replacing the extension to the edge of the board with a hane weakens Black's shape. If it's Black's turn and he wants to live, where is the vital point?



Solution

Solution. Partition

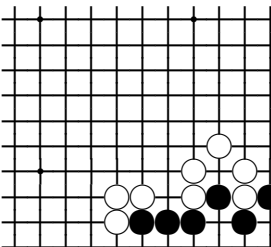
Black 1, establishing a partition between the two eyes, is clever. The presence of the hane means that if White plays 2, Black's capture at 3 gives him one eye at 'a', and he is assured of a second eye by simply blocking a white hane at 'b' with 'c'.



Failure 1

Failure 1. As wide as possible?

Expanding your eye space is not always the answer. It looks as if Black is alive after he descends to 1, but after White attacks with 2 and 4, Black is left with only one eye. The throw-in of White 2, in particular, is essential.



Failure 2

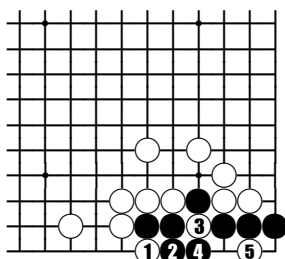
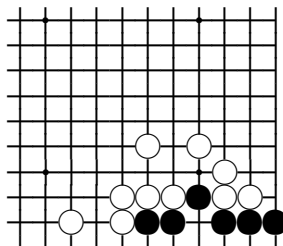
Failure 2. Reversion

What happens when Black, still trying to expand his eye space, connects at 1? In that case we return to the same shape as in the previous pattern. After the combination of White 2 and 4, Black is dead.

Pattern 8

White to play, Black dies

Once again, the position of the bulge has changed. This is a relatively common shape, so for White's play something ordinary is likely to be good enough.

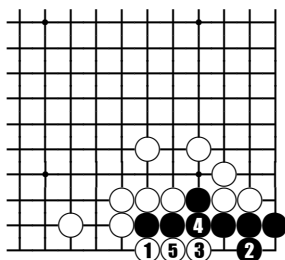


Solution 1

Solution 1. Kill with a hane

The simple hane at White 1 is the killing play Black blocks at 2, and the sequence continues with White's throw-in at 3 and play inside at 5.

In this position it's necessary to first exchange White 1 for Black 2. Starting immediately with the throw-in at 3 ends up failing after Black captures at 4.

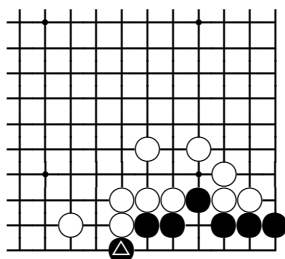


Solution 2

Solution 2. The placement is the key

In response to White 1, Black 2 is a strange play; however, White must take some care. So long as he is aware of the placement of White 3, he will be fine. The sequence continues to 5.

White must not hastily play atari with 3 at 5. If he does, Black blocks at 3 and survives.

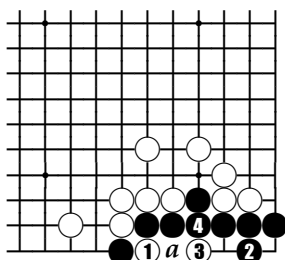


Reference 1

Reference 1. Black is alive

The marked black stone has been added to the problem diagram. If it remains White's turn to play, can he kill the Black group?

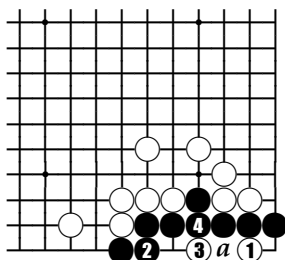
The answer is, if this hane is present, Black is alive. However, if Black plays poorly he still might die, so this shape will be the subject of some further investigations.



Reference 2

Reference 2. Black has an eye.

Consider the throw-in at White 1. In answer to this, Black 2 is a skillful play which might be easy to miss. Next, if White makes the placement at 3, Black connects at 4. After this a White play at 'a' achieves nothing and the role of the black hane becomes apparent.



Reference 3

Reference 3. Seki

This variation also applies to the original pattern. In response to White's play inside at 1, Black can simply expand his eye space with 2. If White 3, Black connects at 4. After this, even if White plays 'a', Black is alive in seki.

Seki

Diagram 1

When you are involved in life-and-death problems, the three types of solutions you are concerned with are, 'life,' 'death,' and 'ko.' Rather than handling seki separately, you should think of it as one of the possibilities under 'life.'

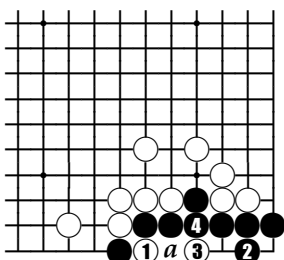


Diagram 1

Diagram 2

If someone laid out a problem such as that in diagram 1 as a tesuji problem, not simply a question of life or death, and asked, 'If it's White's move, what type of result is possible?', the answer might be 'seki'.

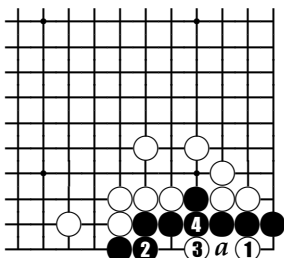


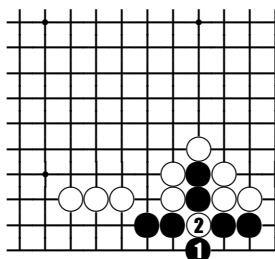
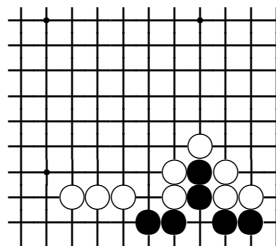
Diagram 2

Diagram 2 is the solution. White 3 is a strong move; the result is seki.

Pattern 9

Black to play and live

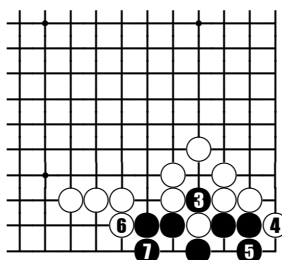
This is a slightly troublesome shape. First you should, of course, consider what happens when Black connects his two stones which are in atari, but if you decide that Black cannot live by playing that way, you'll have to search for a more efficient play.



Solution 1

Solution 1. Retreating

Black 1, retreating to the first line beneath the two stones, is a good, calm play. White 2 captures the two stones, but that is what Black intends. The follow-up is shown in the next diagram.

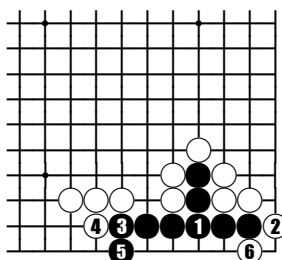


Solution 2

Solution 2. Recapture

Black recaptures with 3. After this, Black answers White 4 at 5 and White 6 at 7 and barely lives with the smallest eye space.

Because the first play was at the vital point for making eye shape, and at the same time made use of a recapture, Black was able to live.



Failure

Failure. Connection

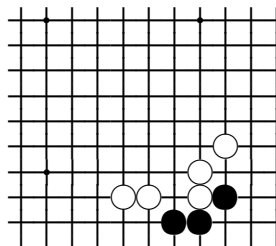
In an actual game Black might very well connect at 1. If he does so, however White hane at the vital point in the corner, and even if Black crawls at 3 he doesn't have the eye space necessary to live. The continuation is to White 6.

Should Black begin by descending with 1 at 2, White, of course, captures at 1 and there is no way for Black to live.

Pattern 10

White to play, Black dies

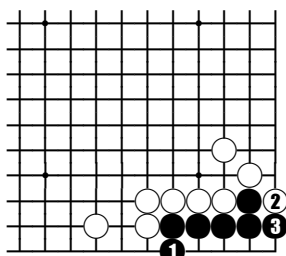
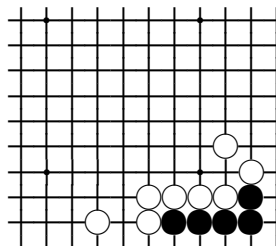
This shape, which looks as if it might very well occur in an actual game, can be considered a practical application problem. It's White's turn to play, but if he makes a mistake on the first move, he ends up in a maze. Use what you have learned up to this point.



Pattern 11

Black to play and live

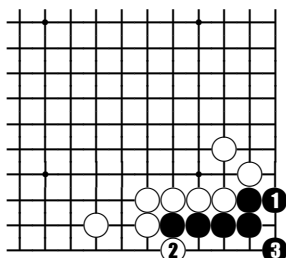
By maximizing his eye space Black has just enough room to live, but there is one thing that Black must be careful about. To begin with, however, he must determine where to make the fast play.



Solution 1

Solution 1. Four-in-a-row living shape

The ordinary descent to Black 1 is sufficient. White can't do anything better than hane at 2, but then Black 3 produces the problem-free four-in-a-row living shape.

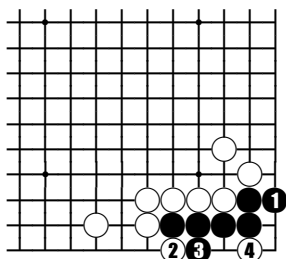


Solution 2

Solution 2. A territorial loss

Descending at Black 1 also makes Black alive; however, it cannot be considered the best method of doing so. When White plays 2, Black has no choice but to retreat with Black 3. Compared to the previous diagram, Black loses as much as 2 points of territory.

Do you see why it is necessary to yield with Black 3?

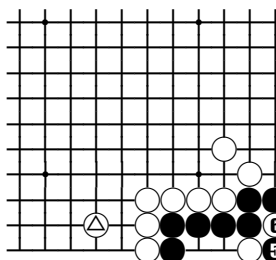


Failure 1

Failure 1. Attachment

After descending at 1, if Black carelessly answers White's hane at 2 by blocking at 3, he will be in serious trouble. White will immediately attach at 4. Now Black will have to pay a price in order to live.

Continuing in the next diagram —

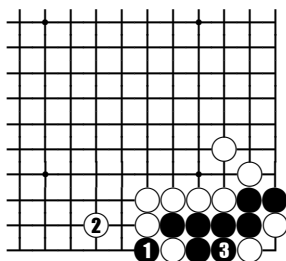


Failure 2

Failure 2. Ko

Black has no choice but to throw in at 5 and ends up with a ko.

Now, just for the sake of clarity, the presence of the marked white stone does have an impact on the life or death of the black group. To see what would happen if this stone were not present, see the next diagram.

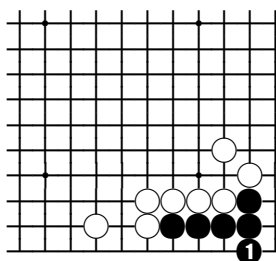


Reference 1

Reference 1. Squeeze play

After the previous diagram, Black captures at 1. If White is forced to play a defensive move at 2, then Black, who still has an unfilled liberty on the outside, can aim at a squeeze play with Black 3.

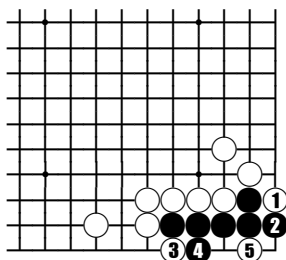
In either case, however, living as in Solution 2 must be considered a loss.



Solution 3

Solution 3. A loss

Black 1, at the vital point for making eye shape, is a tight way of living. Black no longer need be concerned about living, but compared to Solution 1, he has suffered as much as a two-point loss.



Reference 2

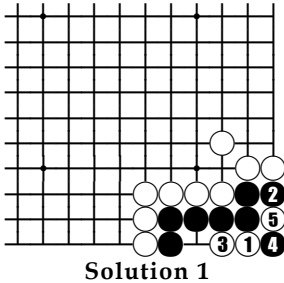
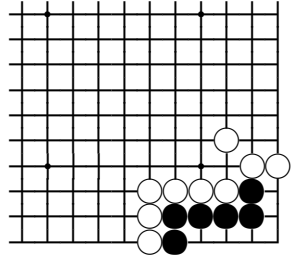
Reference 2. White to play Black dies

Just as a reference, should Black play elsewhere in the original diagram, so that White gets to make the first move here, naturally there is no way for him to live. White narrows Black's eye space with 1 and 3, then plays inside at 5. Black is clearly dead.

Pattern 12

White to play and make a ko

In this position it seems as if Black's base is sufficiently wide, but his lack of outside liberties and the presence of the marked white stone give White an opportunity.

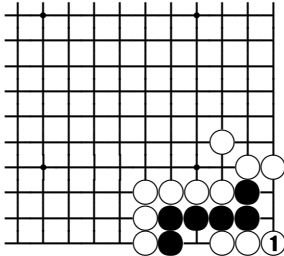


Solution 1

Solution. Attach at the vital point

The attachment at White 1 is a good move. When Black blocks at 2, crawling to 3 is an important play. Black has no choice but to throw in with 4, and now White 5 starts a ko fight.

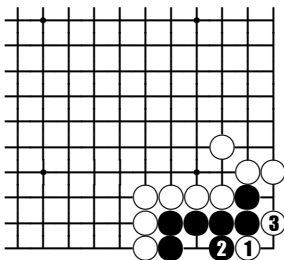
Being in a hurry and starting the ko with White 3 at 5 yields only a one-step approach move ko for White, so be careful. It would also let Black capture the ko first



Reference

Reference. Bent four in the corner

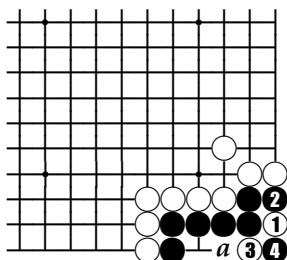
If Black fails to start the ko with Black 4 in the previous diagram, White stretches out with 1. This is not seki, it is a bent four in the corner, and is unconditionally dead.



Variation

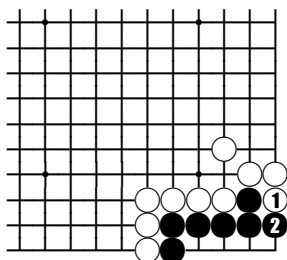
Variation. Unconditional death

In response to the attachment of White 1, blocking at Black 2 is a defensive mistake. White hanes at 3, and then because of a shortage of liberties Black cannot block at 'a'.



Failure 1. Approach-move ko

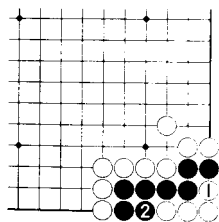
White's attachment at 1 is also a possibility, but it is not the best way. After Black 2 and White 3, Black starts the ko fight with 4. Unfortunately, in this position, after winning the ko White will still have to crawl at 'a' in order to start a real ko for the life of the group. In other words, it's an approach-move ko.



Failure 2. Vulgar

The worst possible play is pushing with **①**. Needless to say, Black lives easily with **②**.

Playing this way totally wastes the value of the marked white stone.



Bent Four in the Corner (1)

Why has the position Bent Four in the Corner' been declared, by rule, to be unconditionally dead?

Diagram 1: In this position, if neither Black nor White makes a move, it will be a seki; however, there is room for White, beginning with White 1, to attempt to capture the black group. The result of that attempt is seen in Diagram 2.

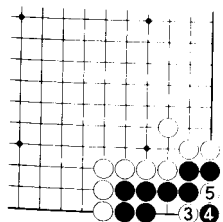


Diagram 2: As shown, the attempt ends in a ko, but the fact that White can wait to take these steps at a time of his own choosing is an important point. Before beginning the ko, White can eliminate all of Black's possible ko threats, making it certain that White will win the ko.

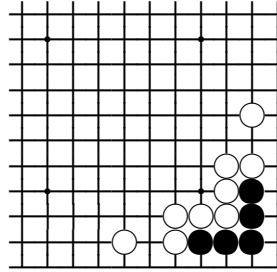
This is why such a group is ruled dead. (See page 19.)

Pattern 13

Black to play and live

The black stones stretch out from the corner to the left and right. It looks as if Black has room enough to live, but he'll need to pay attention to the complexities of the corner.

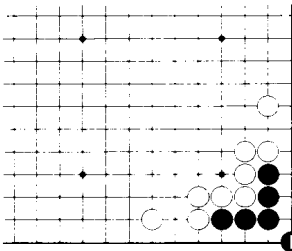
Note, too, that the shape is symmetrical.



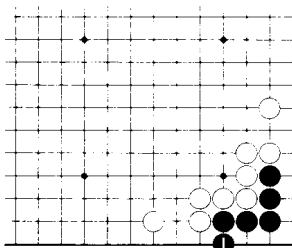
Solution. The 1-1 point

Following the proverb, 'Play in the middle of a symmetrical shape,' Black 1 on the 1-1 point is correct. It should be quite obvious that White has no place from which to launch an attack.

You might well wonder if there isn't any other way to live. The fact that there isn't is the main theme of this pattern.



Solution

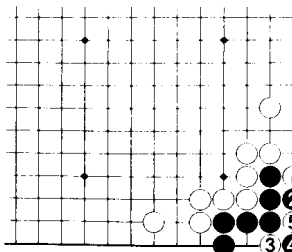


Failure 1

Failure 1. Defect

Based on the shapes we've covered so far, the descent to 1 seems to be the most natural play. However, there is a major flaw in this move.

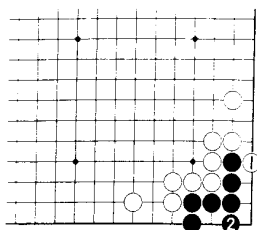
The steps White must take to penalize Black for his mistake are also very important, so we'll discuss them in the diagrams which follow.



Failure 2

Failure 2. Ko

What if White starts with a hane at 1? This is in fact a bad play, but Black's defense, blocking at 2, is also a mistake. The result to this point leaves White with the attachment at 3. Black 4 and White 5 then yield a ko.

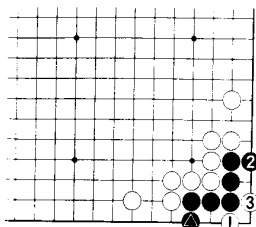


Failure 3

Failure 3. Black survives

As was mentioned, the hane at White 1 is a mistake. Black 2 is the correct defensive play, after which Black is unconditionally alive.

In this diagram White fails to punish Black properly for his mistake with his first move.



Failure 4

Failure 4. Sudden death

The attachment of White 1 is at the 2-1 vital point Black has no choice but to try to expand his eye space with 2, but with White 3 this shape becomes the familiar bent four in the corner.

Bent Four in the Corner (2)

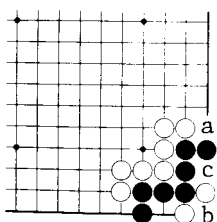


Diagram 1

Diagram 1: Let's just confirm that Diagram 1 ends in the dead bent-four-in-the-corner shape.

At White's leisure he can fill in Black's outside liberty at 'a', then continue with 'b' and 'c' to make a ko. This makes Black 'conditionally' dead. The condition, of course, is that White's surrounding stones must be alive.

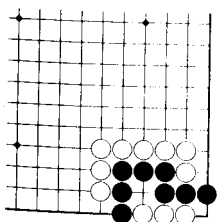


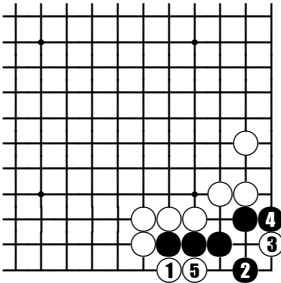
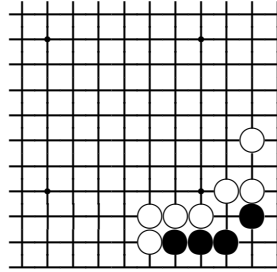
Diagram 2

Diagram 2: So that you don't confuse the bent-four-in-the-corner shape with the bent-four shape which doesn't end up in a ko, take a look at Diagram 2. This is certainly a bent-four-in-the-corner shape, but there is no place for White to play and get a ko. This shape does not result in Black's death; rather, it is a seki.

Pattern 14

White to play, Black dies

In this shape, if it's White's turn, Black is easily killed; if it's Black's turn, he easily lives. Even having said that, however, there is still room for error. First, think about how White, if it's his turn, can kill Black.

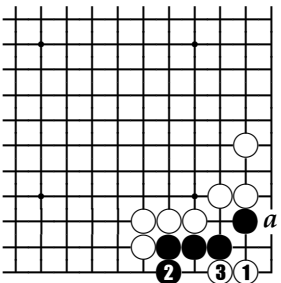


Solution 1

Solution 1. The hane kills

White's hane at 1 is good enough. Black 2 is the vital point for making eye shape, but one more vital point remains at White 3. Next, when Black blocks at 4, White crawls in to 5.

If Black blocks with 2 at 5, then White makes a placement of at 3.

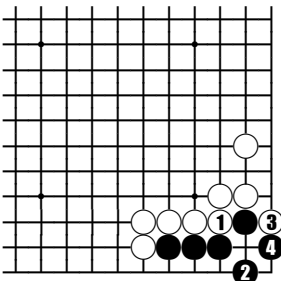


Solution 2

Solution 2. The placement

Even if White immediately jumps in to control the vital point at White 1, Black dies. When Black descends to 2, White crawls at 3. After this, even if Black descends to 'a', White can play elsewhere and Black is still dead.

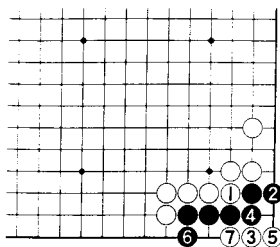
It seems as if there might be still other plays which will kill Black, but...



Failure 1

Failure 1. Ko

Although we've said that Black is dead virtually regardless of how White plays, White shouldn't be too cavalier about it. For example, if he begins at 1, Black 2 makes eye shape, and White 3, Black 4 yield a ko, which is a failure. For Black, too, the play at 2 is important...

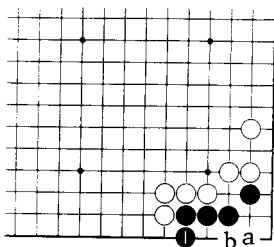


Failure 2

Failure 2. Bent four in the corner

Following White 1, Black 2 looks like a good move, but White's placement at 3 is at the vital point, and the continuation to 7 produces the dead bent-four-in-the-corner shape.

White 3 at 6 lets Black survive by making eye shape at 3.



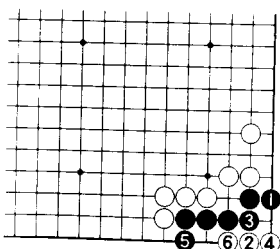
Reference 1

Reference 1. The descent

Let's make certain that in the original pattern, if it's Black's turn, he is alive. If he's careless he could end up dead, so he has to be careful.

The descent to Black 1 makes the group alive. If White 'a', Black 'b'.

Black 1 at 'a', making eye shape, also makes the group alive.

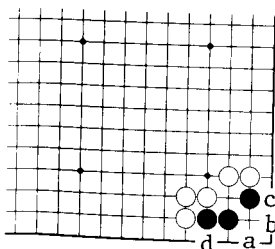


Reference 2

Reference 2. Dangerous

Although it looks similar, the descent to Black 1 is dangerous. White 2 turns out to be at the vital point, and up to White 6 this is once again bent four in the corner.

Even if Black descends with 3 at 5, White crawls at 6 and the result is the same.



Reference 3

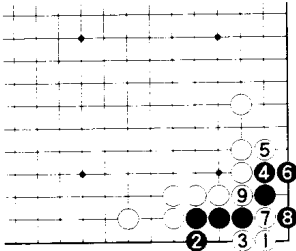
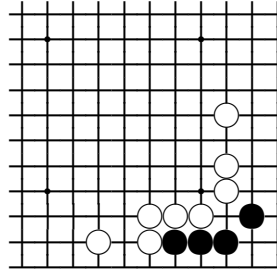
Reference 3. No way to live

Here Black has crawled one fewer space. In this case, even if he plays first, he cannot live. Black 'a' seems to be the vital point, but after the sequence White 'b', Black 'c', and White 'd' the group is dead.

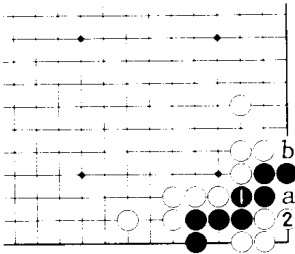
Pattern 15

White to play, Black dies

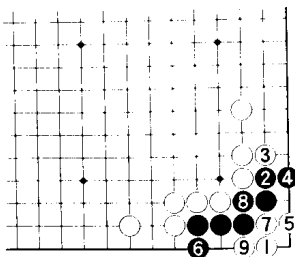
This looks similar to the last pattern, but White hasn't blocked at 'a'. Black looks to be comfortably alive, but if it's White's turn, there is a vital point in Black's position that he can aim at.



Solution 1



Solution 2



Solution 3

Solution 1. The 2-1 point

White 1 is the killing point Black has no choice but to expand his eye space; from Black 2 to 6 is a one-way street. At this point, White 7 is a good move. If Black plays 8, White cuts at 9, and since Black suffers from a severe shortage of liberties, this shape is hopeless for him.

Solution 2. One eye versus no eye

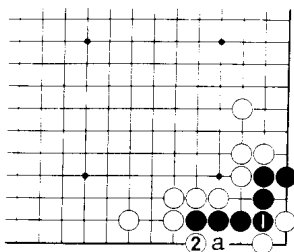
At Black 8 of the previous diagram, what if Black connects at 1? In that case White descends at 2. White now has one eye and Black none, so after Black 'a' and White 'b', Black loses the capturing race and dies because of a shortage of liberties.

Solution 3. Same result

What about if, after White 1, Black expands his eye space from the other side with 2 and 4?

Next, White's diagonal play at 5 is important. After Black 6, White 7, connecting at the shoulder, Black 8 and White 9 give the same result as in the previous diagram.

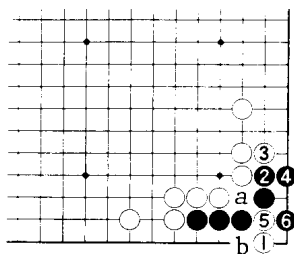
Instead of 6 —



Solution 4

Solution 4. No way to live

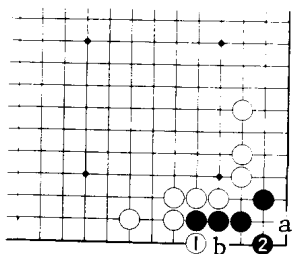
If Black plays at 1 to avoid the capturing race in the previous two diagrams, White's hane at 2 kills him. Needless to say it is useless for Black to continue by playing at 'a', as the result is bent four in the corner.



Failure 1

Failure 1. Mistake at White 5

After White 1 through Black 4, the thrust upwards at White 5 is a mistake. Black hanes at 6, and now even if White cuts at 'a', Black will make two eyes at 'b'. Be careful of the slight difference between this result and that of Solution 1.

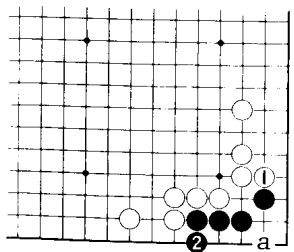


Failure 2

Failure 2. Simplicity

Going back to the beginning, you might wonder about the hane of White 1, but, as might be expected, such a simple play will not kill the black group.

Black 2 turns out to be the vital point. Even if White continues at 'a', Black blocks at 'b' and is alive.



Failure 3

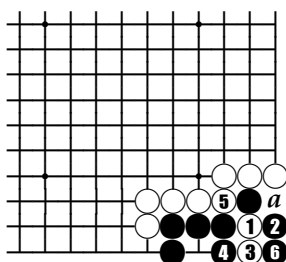
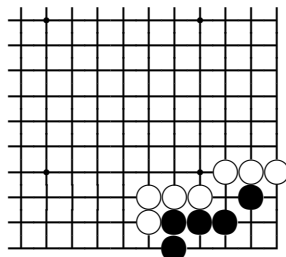
Failure 3. A mediocre move

Blocking at White 1 is an even worse play. Black plays 2, or, as we saw in Pattern 14, makes eye shape with Black 'a'.

Pattern 16

White to play, Black dies

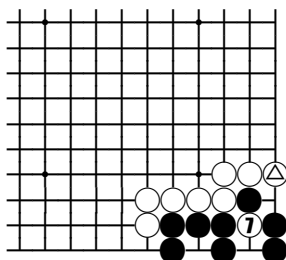
White's descent on the right side will make its presence felt. The point here is whether or not you can hit the mark with your first move. The details which follow are merely icing on the cake.



Solution 1

Solution 1. Contact play inside

It's the contact play inside at White 1 or nothing. This is the only possibility for Black 2, since if Black plays atari at 3 instead, White descends at 2, and if Black 5, White 'a'. In either case Black is easily killed. Next, White extends with 3 and, when Black plays 4, cuts at 5. After Black's forced capture at 6...

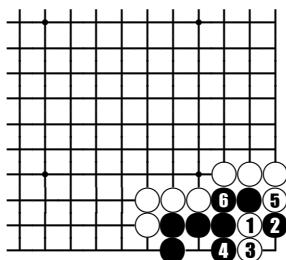


Solution 2

Solution 2. False eye

The throw-in at White 7 makes this a false eye. The marked white stone has really done its work.

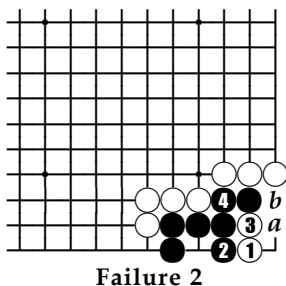
By the way, within this series of moves, there is one easy mistake to make.



Failure 1

Failure 1. Cutting on the wrong side

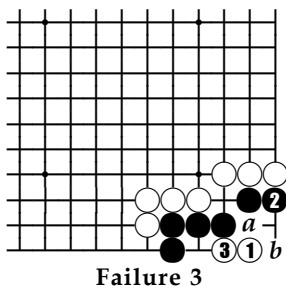
After White 1 through Black 4, if White carelessly cuts underneath at 5, the strong play at White 1 comes to nothing. Black can simply connect at 6. The two white stones are captured as they are, and there is no way to make it a false eye.



Failure 2. First impressions

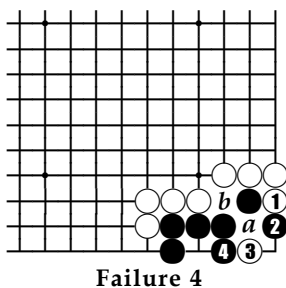
Your very first thought was probably White 1. But Black blocks at 2, and then White thrusts up at 3. Now, if Black plays at 'a', White cuts at 4 and Black dies. Instead, at this point, the connection at 4 also becomes a good play for Black

If White plays 3 at 'b', then Black 'a', White 3 and once again Black connects at 4 and lives.



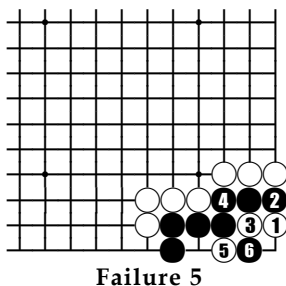
Failure 3. Defensive slip-up

In response to the placement at White 1, Black's block at 2 is a defensive slip-up. After White crawls at 3, Black is dead. The continuation Black 'a', White 'b' produces bent four in the corner.



Failure 4. A vulgar play

Pushing at White 1 is a vulgar move. If Black obligingly connects at 'a' after White 3, he certainly dies. However, he will block at 4 instead. Now, if White 'a', Black connects at 'b' and lives.



Failure 5. Placement

The placement of White 1 might also come to mind. When Black plays 2, White tries to make a large eye inside Black's shape with 3 and 5, but Black has the throw-in at 6, so the attempt ends in failure.

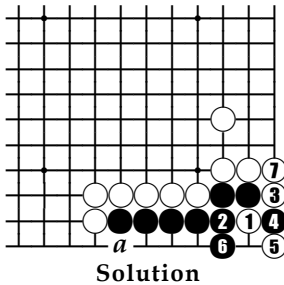
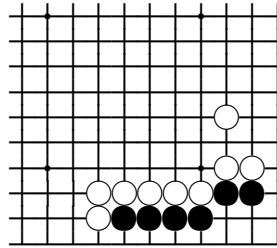
If only Black's liberty at 'a' were already filled in...

Pattern 17

White to play, Black dies

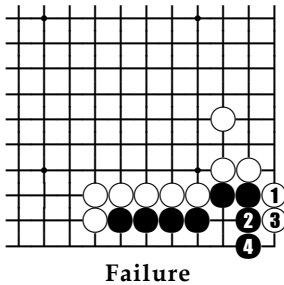
This shape is a little different from those we've covered so far.

Black seems to be wide enough to have no trouble living; however, his group has a fatal defect



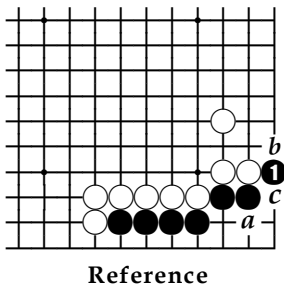
Solution. Belly attachment

Because the liberties of Black's two stones have been filled in, the belly attachment of White 1 works well. Black is forced to connect at 2, and White links under with 3. Following this, Black 4 to 6 are forced; even if Black descends to 'a' after White 7, his position is one line too narrow to live.



Failure. Giving way

If White plays a hane at 1, Black can give way at 2. If White 3, Black 4 easily makes life. Should Black carelessly respond to 2 by playing hane at 3, White cuts at 2 and Black dies.



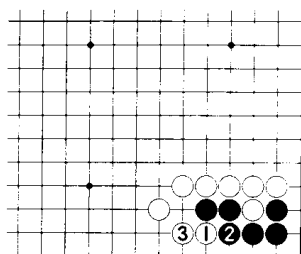
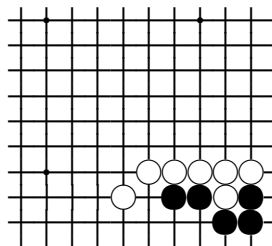
Reference. Black to live

If it's Black's turn, he can live by playing virtually anywhere, but the hane at Black 1 is best. The point is that Black simply needs to defend against White 'a', and since Black 1 has meaning for the endgame, it should give Black the greatest profit. Should White play 'b', connecting at 'c' is, of course, adequate.

Pattern 18

White to play, Black dies

Even as a practical application problem, this is one of the easiest types. If you're able to imagine how the black stones will look when lined up on the second line, you'll probably be able to work out the solution.

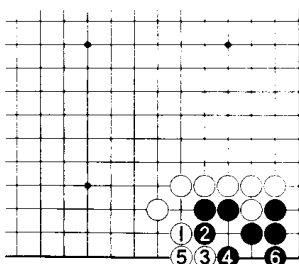


Solution

Solution. The key

If White discovers the attachment at 1, it's all over. When Black plays 2, White pulls back at 3 and it is evident that there is no way for Black to live. Instead of 2, if Black hanes on the outside at 3, White can cut at 2.

The key is whether or not you can find White 1.

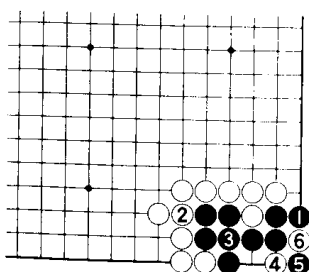


Failure 1

Failure 1. Vulgar

The diagonal play of White 1 could be played by anybody. If something like this killed the black group, there wouldn't be a problem to solve. After Black 2 to White 5, Black occupies the vital point at 6 and is alive.

Note that Black 6 is crucial...



Failure 2

Failure 2. Black's mistake

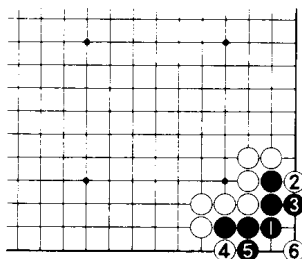
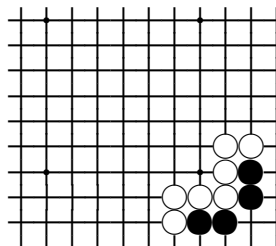
Black's descent at 1 comes under the heading 'Black's mistake'. After White plays atari at 2 and Black 3 connects, White can force a ko with 4. Notice that Black cannot squeeze because of a shortage of liberties.

Instead of connecting at 3, Black can live by playing 5, but having these three stones captured is painful.

Pattern 19

Black is dead

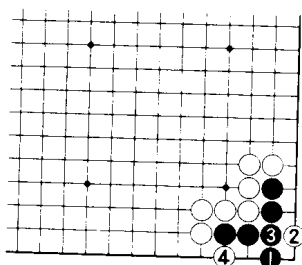
A certain measure of eye space makes a group secure, but, with all of its liberties filled in, the cutting point at the 2-2 point becomes a weakness. In this shape, Black cannot live even if he gets to make the first move.



Variation 1

Variation 1. Connecting

Let's take a look at Black's attempts to live. First, the connection at Black 1. In this case, White hanes at 2 and 4, and the placement at 6 kill Black cleanly.

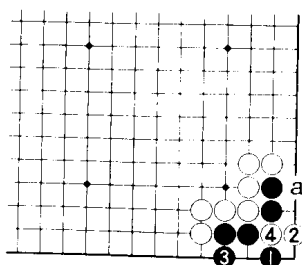


Variation 2

Variation 2. Eye shape

Next, what if Black defends at the 2-1 point?

White is naturally left with the vital point at 2. When Black connects at 3, White hanes at 4. Instead of 3 —



Variation 3

Variation 3. Falling short

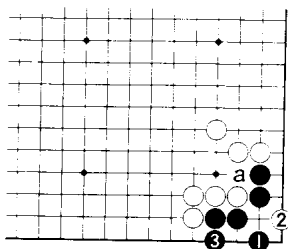
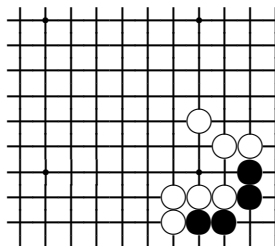
Even if Black makes one eye with 3 here, he is dead when White cuts at 4. White can also use 4 to connect underneath at 'a'.

Since this is a symmetrical shape, Black 1 at 2, making eye shape on the other side, gives the same result

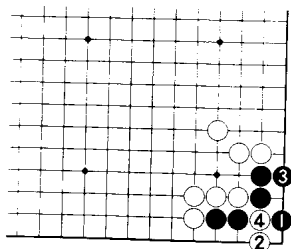
Pattern 20

Black to play and live

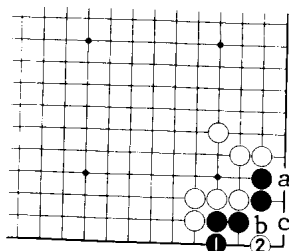
This is similar to the previous pattern, except that Black has an unfilled liberty on one side. That open liberty is Black's lifeline. In this shape, Black can live if it's his turn.



Solution 1



Failure 1



Failure 2

Solution. Eye shape

Black 1, making eye shape, is the vital point. When White makes the placement at 2, Black makes an eye at 3. This time White's stone cannot connect to the outside. The meaning of the open liberty at 'a' should be apparent.

Failure 1. Opposite side

Take a close look at the direction of Black 1 in Solution 1. If Black plays it on the opposite side, then after White's placement at 2, this shape is dead. When Black tries to make an eye at 3, White will cut at 4. In this diagram, Black doesn't make use of the open liberty

Failure 2. Descent

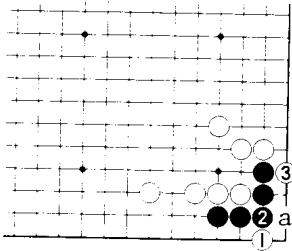
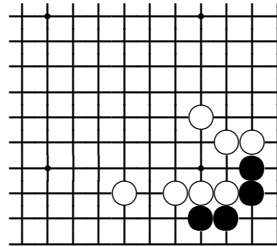
What about Black's descent at 1? Unfortunately White 2 turns out to be at the vital point Black cannot live. If Black continues by descending at 'a', White can play elsewhere. Next, 'b' and 'c' are miai.

If White makes the mistake of playing 2 on the wrong side, at 'c', Black can play at 2 and live.

Pattern 21

White to play, Black dies

White's block at 'a' has been removed from the previous pattern. The question is: can White kill Black if it is his turn? Obviously, if he simply blocks at 'a', Black lives.

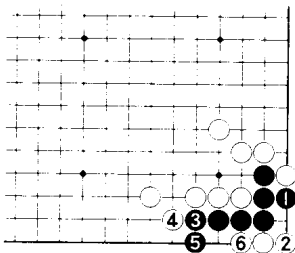


Solution 1

Solution 1. The placement is the vital point

The placement at White 1 is again the vital point. This position is confusing, because White has the placement at 'a', so it's important to take a close look at the location of Black's liberties. If Black connects at 2, White hanes at 3.

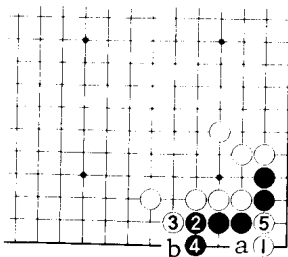
Next...



Solution 2

Solution 2. Expanding doesn't work

Black 1 probably provides the strongest resistance. However, White 2 robs him of his eye. When Black expands his eye space with 3 and 5, White plays 6. The end result is the bent four in the corner we have already seen a number of times.

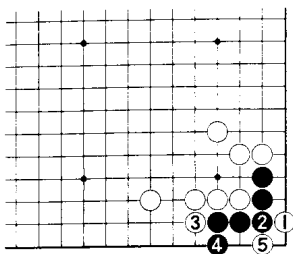


Solution 3

Solution 3. Shortage of liberties

After White 1, what happens if Black immediately expands his eye space with Black 2 and 4?

White has the cut at 5. If Black plays at 'a', White 'b' is atari. Black is plagued by his shortage of liberties.



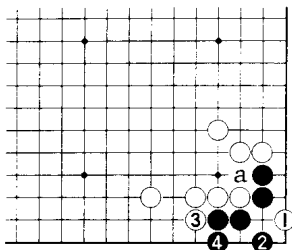
Failure 1

Failure 1. The other placement

White's placement at 1 is another vital point, but will it kill the black group?

If Black connects at 2, White blocks at 3. When Black descends to 4, White hanes at 5. At this point Black is dead.

However, Black has made a mistake in this diagram.

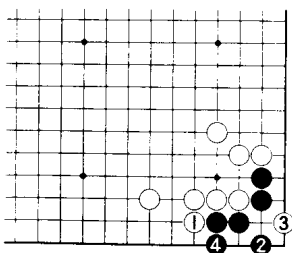


Failure 2

Failure 2. Alive

In response to White 1, Black must make the diagonal play at 2. This is after all the true vital point.

White has no choice but to block at 3, so Black makes an eye at 4. Black has once again been saved by the liberty at 'a'.

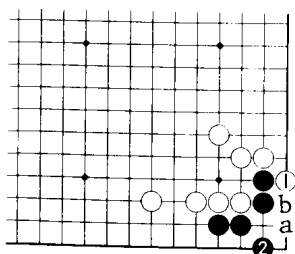


Failure 3

Failure 3. Blocking outside

As we said at the outset, blocking on the outside with White 1 lets Black play at the vital point with 2 and live.

You mustn't forget that there is a weakness in the base of Black's position.



Failure 4

Failure 4. Hane

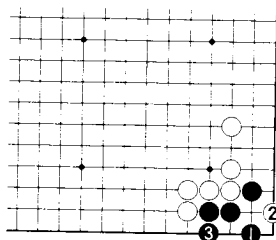
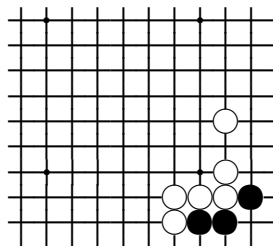
How about White's hane at 1? Here, too, Black plays at 2 and lives. White's only continuation seems to be 'a', but Black blocks at 'b' and is alive.

Should Black block with 2 at 'b', White can play at 2 and kill him.

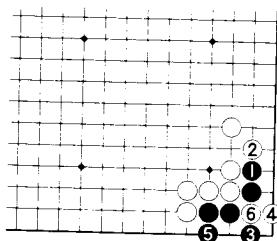
Pattern 22

Black to play and live

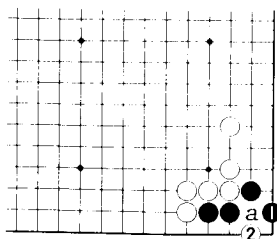
This is the most abbreviated Black shape so far, but the principle is the same, Black to play and live. There is only one vital point



Solution 1



Failure 1



Failure 2

Solution. The same move

Once again, making eye shape at Black 1 is the key. White has to play at 2, but when Black descends at 3, he is alive.

Obviously if White plays 2 at 3, then Black 2.

Failure 1. Impulsive

What Black has to take care of is not to crawl impulsively at 1. It seems as if he is expanding his eye space, but the instant he plays it, he loses all hope of living.

When Black plays 5, White cuts at 6, and Black's shortage of liberties kills him.

Failure 2. Different direction

Black 1 makes eye space in the opposite direction. White plays 2 at the original vital point. Because this gives rise to the cut at 'a', Black doesn't have enough room to live.

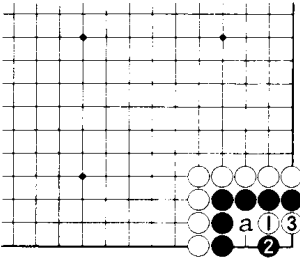
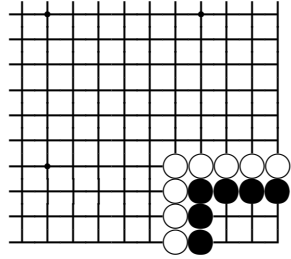
Part Two:

**Six-Space Eye Shapes
in the Corner**

Pattern 1

White to play, Black dies

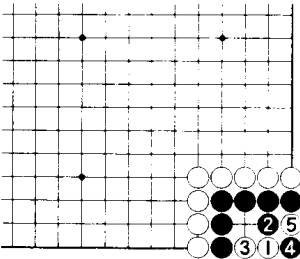
This is the six-space group. Notice that all of the outside liberties are filled in. If it's White's turn, Black will die; however, it's easy to slip up if you're not careful.



Solution

Solution. Shortage of liberties

The attachment at White 1 is correct. Black is forced to make a counter-attachment at 2, but blocking at White 3 is good enough. Because of his shortage of liberties, Black cannot block at 'a', so he dies. This shortage of liberties might be something of a blind spot for you.

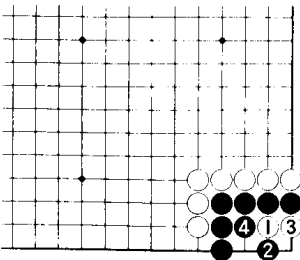


Failure

Failure. Ko

White 1 is also at a vital point and forces Black 2. Now, after White 3, Black plays at 4 to get a ko.

If Black doesn't use 4 to make ko, then White can play there and make the shape into a bent four in the corner. In any case, ko is a failure for White.

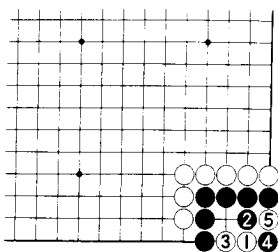


Reference 1

Reference 1. Black is alive

One of Black's outside liberties is open. Now what happens if it's White's turn to play?

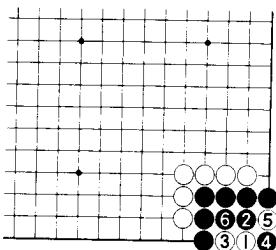
In response to the attachment of White 1, Black again plays 2. Now, however, when White plays 3, Black can fill in at 4 and is unconditionally alive. Accordingly, in this case White 1 is a mistake.



Reference 2

Reference 2. Ko is correct

White 1 here is now the correct solution. Black 2 to White 5 produce a one-step ko for White. In this shape, simply make note of the fact that Black has exactly one liberty on the outside, then compare it to the next diagram.



Reference 3

Reference 3. Two liberties

Now there are two liberties on the outside.

White tries playing at 1, but, after White 5, it's possible to crush at Black 6.

This shows that when Black has two or more liberties on the outside, he is unconditionally alive.

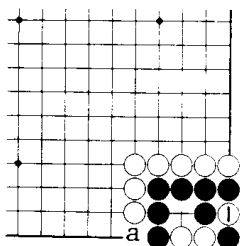


Diagram 1

One-Step Ko

Diagram 1 is a repeat of Reference 2. After White takes the ko at 1, he has to add one more stone at 'a' before it becomes a real ko. At the point when White takes at 1, this is called an approach-move ko. The nature of such a ko is such that, in comparison to a real ko, the burden on Black is lighter

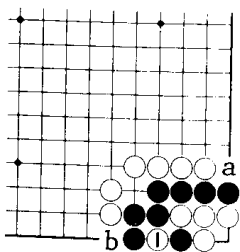


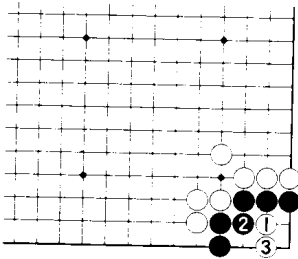
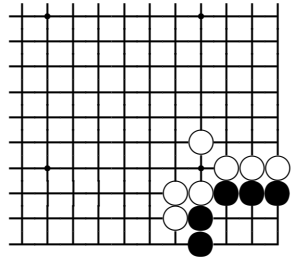
Diagram 2

In *Diagram 2*, White begins a ko fight with 1, but after this White must still fill in Black's liberties at both 'a' and 'b' to make this a real ko. This is a two-step approach move ko, which has almost no effect on Black.

Pattern 2

White to play, Black dies

White has played at the corner of this 'six-space eye' group. What difference does this make? Also, pay attention to the status of the outside liberties.

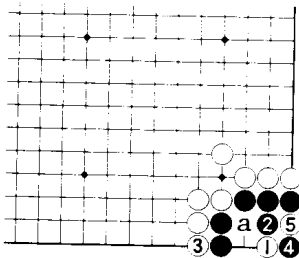


Solution

Solution. Belly attachment

White 1 again turns out to be successful. Black has to connect at 2, and White's descent to 3 produces a dead shape.

Attaching at 3 instead of Black 2 makes no difference. White cuts at 2 and it's all over.

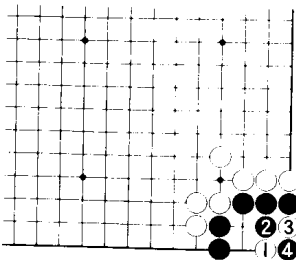


Failure 1

Failure 1. Ko

The placement at White 1 is also at a vital point. When Black attaches with 2, White's block at 3 produces a ko.

If Black uses 4 to connect at 'a', a white play at 4 kills him.

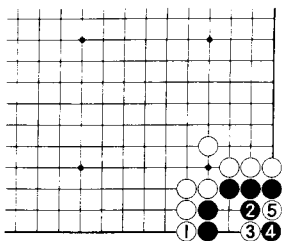


Failure 2

Failure 2. Starting the ko

This is a variation of the last diagram. If White decides to throw in at 3 instead of blocking on the outside, it becomes Black's turn to take the ko first rather than White's. This is a loss for White.

In either case, making a ko in this situation is a failure for White.

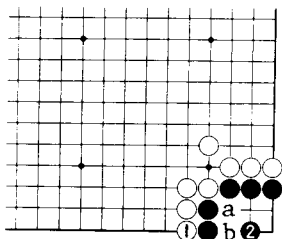


Failure 3

Failure 3. An ironic play

In the beginning, White 1, blocking on the outside and filling Black's liberty, is an ironic play. After playing this, White cannot kill Black.

Black's defense at 2 is dubious, as White attaches at 3, and with Black 4, White 5 it becomes a ko.

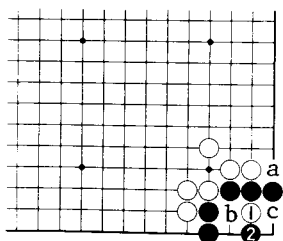


Failure 4

Failure 4. Best defense

In response to White 1, defending at 2 is a good move. In this case, if White plays at 'a', Black answers at 'b', and nothing happens.

You could say that White's blocking play at 1 turns out to be a fraud.

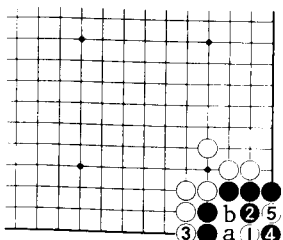


Reference 1

Reference 1. alive

Next, what if Black is given an extra liberty at 'a'? In that case, the possible results from a white play here also change.

First there is the belly attachment at White 1, but after Black attaches at 2, he is alive. In the continuation, 'b' and 'c' are miai.



Reference 2

Reference 2. Ko

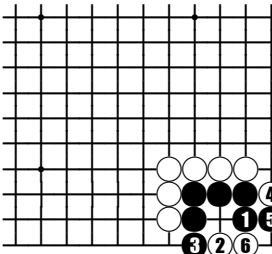
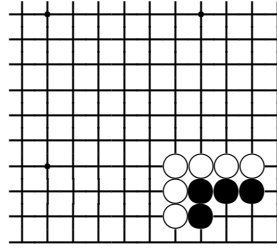
How about the placement at White 1? When Black plays 2, White's block at 3 is a good move. Next, Black 4, White 5 starts a ko.

Be careful of playing White 3 at 'a'. Black will set up a squeeze with Black 4, White 5, Black 'b', and live.

Pattern 3

Black is dead

This shape often appears in actual play and is known as the 'L-shape'. Even if it is Black's turn, he cannot live with one move. If you learn this shape thoroughly it'll be easier for you to understand its various applications.



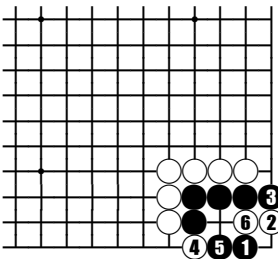
Variation 1

Variation 1. Turning

Let's look at a number of possibilities for Black 1.

First, there is the 'turn' at 1 here. The placement at White 2 becomes the vital point. The moves to 6 give Black a big eye (one large eye inside his position), so he is dead.

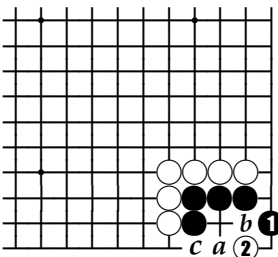
White can also begin with 2 at 4.



Variation 2

Variation 2. The jump

Next is Black's jump to 1. This is the move which looks as if it has the best chance of succeeding, but White 2 is at the vital point on the other side. Up to White 6, Black again fails to make more than one eye.

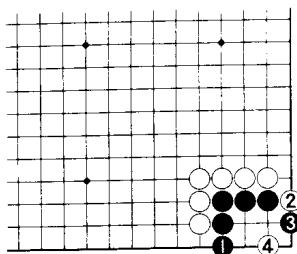


Variation 3

Variation 3. Diagonal play

What about Black's diagonal play at 1? Unfortunately White's placement at 2 is at the vital point, and there is not enough room to make two eyes. Black 'a' is answered by White 'b'.

White 2 is absolutely the vital point. Playing a hane at 'c' instead lets Black live by playing at 2.

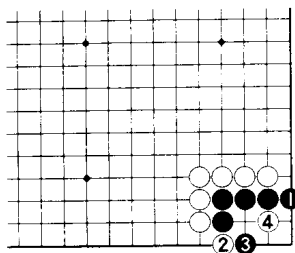


Variation 4

Variation 4. Descent #1

How about descending at 1 to expand Black's eye space? This, too, is not a difficult shape. If White hanes at 2, Black's block at 3 makes this into the five-space big eye. The placement at White 4 kills the group.

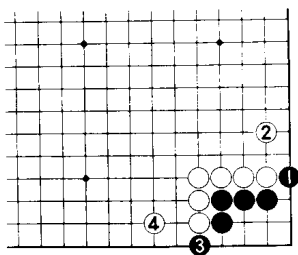
For White 2 and 4, other moves are possible, but investigation is probably pointless.



Variation 5

Variation 5. Descent #2

To continue, next is Black's descent at 1. Here too White should hane at 2. When Black blocks at 3, we once again have the easy-to-kill five-space big eye.

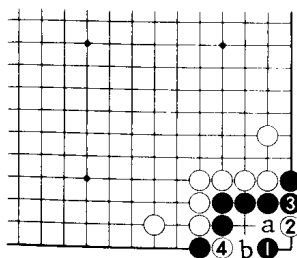


Reference 1

Reference 1. Hane makes no difference

Suppose that Black has the benefit of hane at both Black 1 and 3. If it's his turn, doesn't he have room to live now?

The answer is 'no', so White should respond calmly with 2 and 4.



Reference 2

Reference 2. Same result

After the last diagram, let's look at Black's jump to 1. Just as before, White 2 is the vital point. After Black 3, White throws in at 4, and there is no way for Black to live.

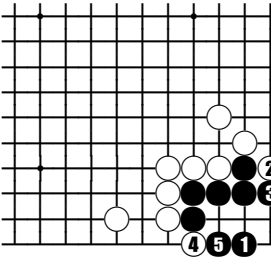
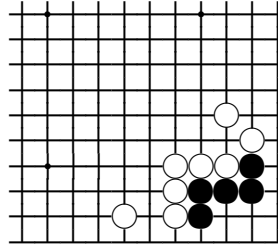
The turn of Black 1 at 'a' is also killed by White 'b', just as before. You should investigate Black's other possible moves yourself.

Pattern 4

Black to play and live

A leg has been added to the basic 'L-shape.' Now, if it's Black's turn, he can live. Also, if it's White's turn, he can kill

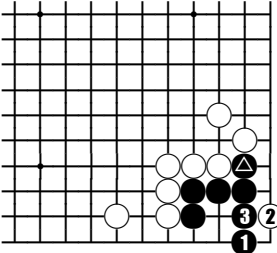
Black You should learn how to do that as well.



Solution 1

Solution 1. The jump

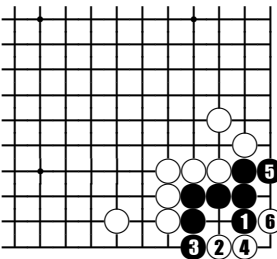
There are a few different ways for Black to live, but the jump to Black 1 is the easiest to understand. Even if White tries to reduce Black's eye space with White 2 and 4, Black 3 and 5 produce a living bent-four shape.



Solution 2

Solution 2. Powerless placement

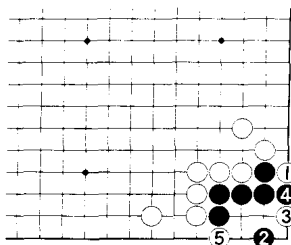
After Black 1, White 2 is at the vital point, but Black defends at 3 and has no problems. The marked stone works effectively, so White 2 is also powerless to kill Black



Solution 3

Solution 3. Alive, but...

Black can also live by turning at 1. White 2 is met by descending to 3 and when White plays 4, Black plays 5. It's a gote seki for White, but of course living unconditionally is preferable to seki, so the previous diagram is better for Black. In the middle of this sequence, if White plays 4 at 5, Black plays at 4.

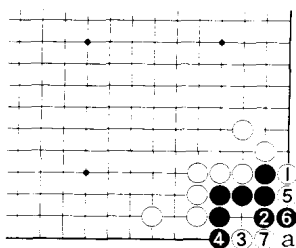


Reference 1

Reference 1. The L-shape

Now let's consider how White, if it's his turn, should play to kill Black

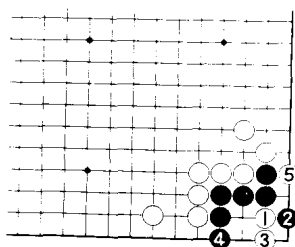
If you understand the previous pattern, which is one of the most fundamental, then the discussion is simple. If White plays a hane at 1, the shape reverts back to the L shape, so simply answer Black's responses by attacking at the vital point. For example, if Black tries 2, White 3.



Reference 2

Reference 2. Placement at the vital point

After White 1, if Black turns at 2, White makes the placement at 3. After Black 4, either White 5, then 7, or White 7, Black 5, White 'a' kill Black.

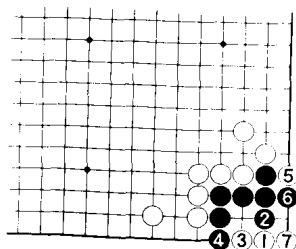


Reference 3

Reference 3. Belly attachment

Since there are ways to kill the Black group other than with a hane, for the sake of clarity, let's cover some of them.

White's attachment at 1 is okay. If Black 2, White descends at 3, aiming to link under to the left. When Black plays 4, White 5 ruins his eye shape.



Reference 4

Reference 4. The 2-1 point

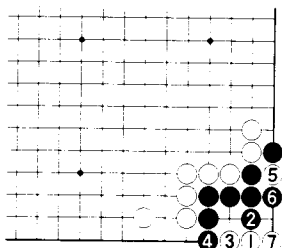
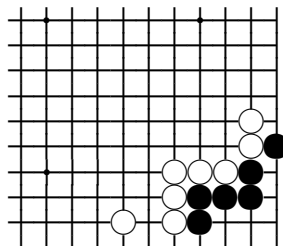
White also can make the placement at 1. If Black 2, White extends to 3, and after Black 4, White 5 to 7 is the continuation.

Learning the killing technique of the hane is the easiest, but learning these other measures, as well, is certainly not wasted effort.

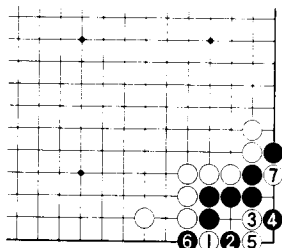
Pattern 5

White to play, Black dies

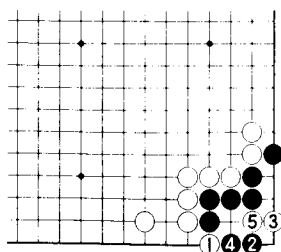
Since the last pattern, Black's hane has been added to the shape. Because of the presence of this hane, some of White's killing moves have been eliminated. Where should White make his first play?



Solution 1



Solution 2



Solution 3

Solution 1. The placement

In this shape, the placement at White 1 is one strong move. When Black plays 2, White extends at 3, Black 4, White 5, Black 6, White 7 leaves Black dead.

If White 1 at 2, Black plays the diagonal attachment at 3, then White extends to 2 and Black is still dead.

Solution 2. Even the hane works

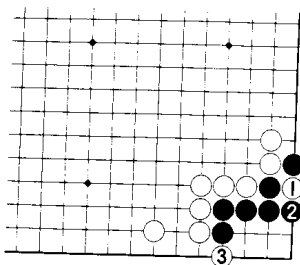
Even the combination of the hane at White 1 and the vital point of 3 leaves Black dead. The likely continuation is Black 4, White 5, and now Black cannot leave out 6, so White throws in at 7.

If instead of 4, Black crawls to 5, White extends to 4.

Solution 3. Evasion

After White 1, if Black dodges to 2, White makes the placement at 3. Next he can answer Black 4 at 5.

In addition to these possibilities, if, instead of 2, Black decides to make the diagonal play at 3, White jumps in at 2 and Black is still dead.

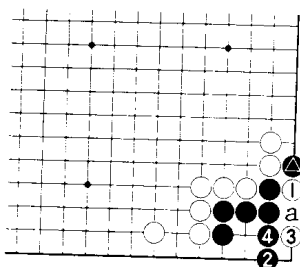


Failure 1

Failure 1. Black is hasty

What about White's throw-in at 1? If this killed Black, things would be simple for White.

Black 2 is hasty, as the white hane at 3 kills him.

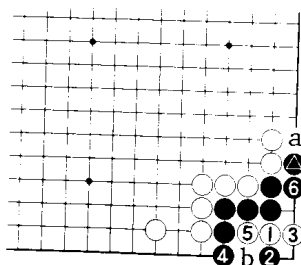


Failure 2

Failure 2. A good move

After White 1, dodging to Black 2 is a good move. In answer to White's placement at 3, Black connects at 4, and White 'a' doesn't work. In this situation, the marked black stone is making its presence felt.

The point of this diagram is to show that White's throw-in at 1 doesn't work.

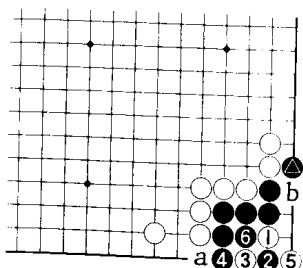


Failure 3

Failure 3. The hane is working

What about White's attachment at 1? Black 2 is tenacious, and after White 3, Black descends to 4. The shape resulting from the sequence up to Black 6 is alive. Next, if White plays 'a', Black 'b'.

Halfway through, if White plays 5 at 6, then Black 5. The marked black stone is definitely making its presence felt.



Failure 4

Failure 4. Ko

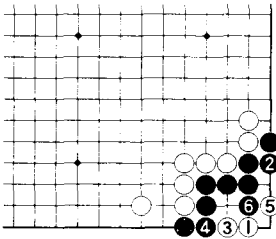
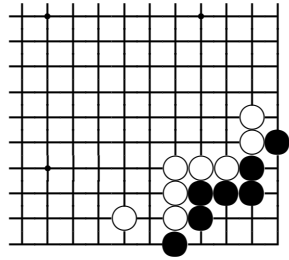
After White 1 and Black 2, White's best play is at 3, but after Black 4, and 6 White still can't do better than an approach-move ko. Black can even play elsewhere, if he wishes, after a white play at 'a'.

By the way, if in the basic pattern the hane of the marked black stone is changed to a hane at 'a', then a white hane at 'b' easily kills the group.

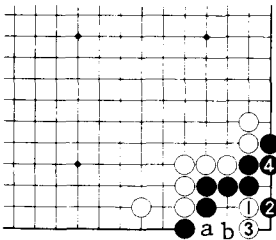
Pattern 6

Black is alive

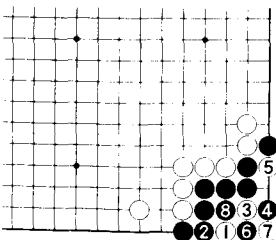
Hanes have been added to both sides of Black's group. This makes the shape more tenacious. Even if White makes the first move, Black will not die. Lets see just how tenacious the group is.



Variation 1



Variation 2



Variation 3

Variation 2. No linking under

First we'll look at White 1. In this case, the presence of the marked black stone means White cannot link underneath, so Black connects at 2, after which things don't go well for White. Taking the vital points at White 3 and 5 merely forces Black 6, and White can do no better than seki.

Variation 2. Belly attachment

If White begins with the belly attachment at White 1, Black's hane at 2 is good enough. When White plays 3, Black connects at 4 and once again White cannot link underneath at 'a', so Black is alive.

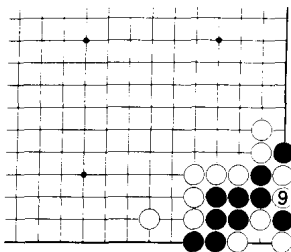
Additionally, if White tries beginning with 'a', then Black 'b' and the sequence White 1, Black 2, White 3, Black 4 follows, leaving Black alive.

Variation 3. An annoying play

What about White's placement at 1? For Black, this is probably the most troublesome play.

When Black connects, White makes the diagonal play at 3. Black's hane at 4 is good, but from Black 6 on, things become a little complicated.

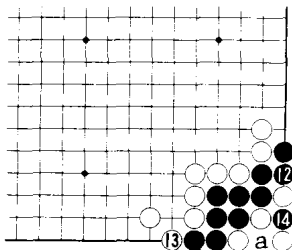
Black 8, not playing the ko, is a good move. See the next diagram.



Variation 4

Variation 4. A struggle

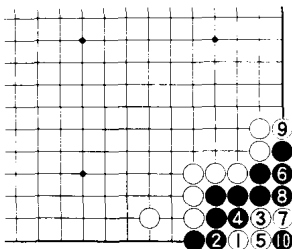
White has to capture at 9, but after this Black can recapture two white stones by playing one space below 9. Next, White also recaptures with 11 at 9, and we move to the next diagram.



Variation 5

Variation 5. Double ko

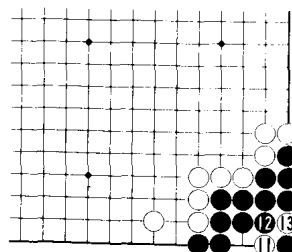
Continuing from the last diagram, Black connects at 12. White has to fill in an outside liberty at 13, and Black captures at 14. This shape is a double-ko, so it's alive. Even if White eliminates all possible ko threats before recapturing at 14, Black can simply take the ko on the other side at 'a'.



Failure 1

Failure 1. Negligence

After White 1 to 3, playing atari at Black 4 is a blunder. After White connects at 5, Black has no choice but to secure his base with 6. White 7 forces Black 8 and White fills in an outside liberty at 9. After Black takes the four stones with 10...



Failure 2

Failure 2. Ko

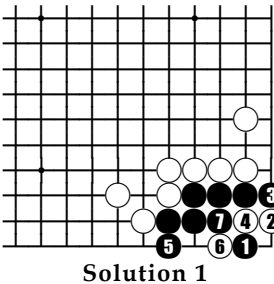
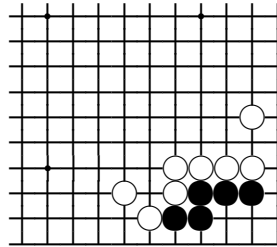
White has the attachment at 11. Black is forced to play 12, and with 13 White gets a ko.

In this pattern, the path leading to the double ko is interesting, and worth reviewing at least once more.

Pattern 7

Black to play and live

A 'leg' has been added to the left side of the 'L-shape.' In this case, if it's Black's turn, he is alive, and if it's White's turn, he is dead. We'll investigate each case.

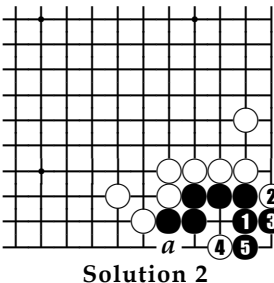


Solution 1

Solution 1. The 2-1 point

Black 1 is one of the vital points for Black to live. If White plays 2, Black 3. When White extends to 4, widening his base at Black 5 is good; in response to White 6, Black 7 keeps this from becoming the five-space big eye.

If Black 5 is played at 7, Black is also alive, but with less territory and less endgame potential.

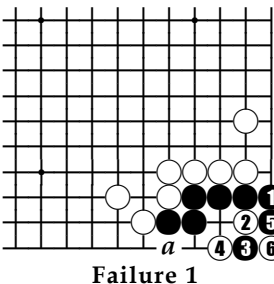


Solution 2

Solution 2. The 2-2 point

Turning at Black 1 also lets Black live. After White 2 and Black 3, White 4 is the vital point, but Black can block at 5.

Additionally instead of turning at 1, Black can live by playing the diagonal play of 4; however, in response to White 'a', he will have to give way with Black 1, so this is something of a territorial loss.

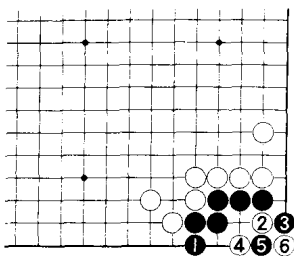


Failure 1

Failure 1. Ko

Black's descent at 1 is a move which has bad *aji*. White's attachment at 2 becomes the vital point, and after Black 3 and 5, he can't do anything but make a ko.

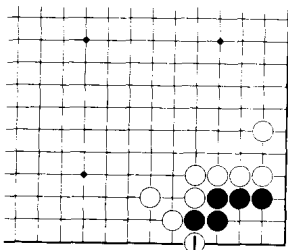
If Black plays 3 at 5, White answers at 3; likewise, if Black tries 3 at 'a', White plays at 4. Either way, Black is dead.



Failure 2

Failure 2. Also ko

How about the descent to Black 1 here? This move also creates a shape with bad *aji*, and after White attaches at 2, there is no way for Black to live unconditionally. If Black plays 3, White makes the diagonal play at 4; Black is left with no choice but to throw in with 5, giving a ko. If White plays 2 at 4, Black 5, White 2, Black 3 gives the same ko.

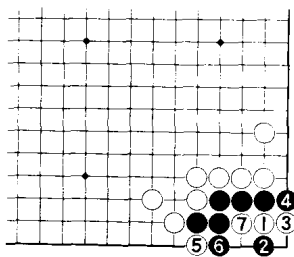


Reference 1

Reference 1. White to play, Black dies

Now consider where White, if it's his turn, should play to kill Black

Actually, this is easy. If White plays a hane at 1, this becomes almost the same shape as Pattern 3 of this section; no matter what Black plays, he cannot live.

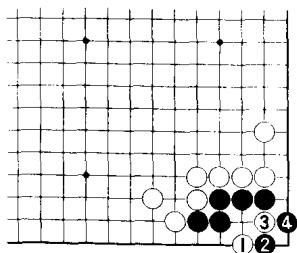


Reference 2

Reference 2. Attaching also kills

In addition to the hane, there are other moves which kill the black group.

To begin with, White has the attachment at 1. Black 2 is a confusing play, but White coolly descends to 3, then plays 5 and 7, and Black is dead. Instead of 3, if White rushes to play 4 and link underneath, then Black throws in 3 at and gets a ko.



Reference 3

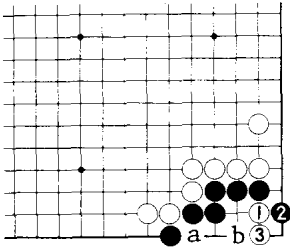
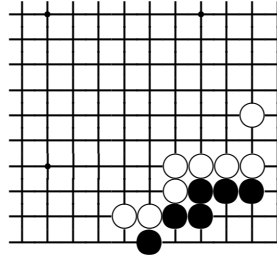
Reference 3. Ko

The placement of White 1 also looks like a vital point at first, but Black will resist with 2. Black answers White 3 with 4, getting a ko.

Pattern 8

White to play, Black dies

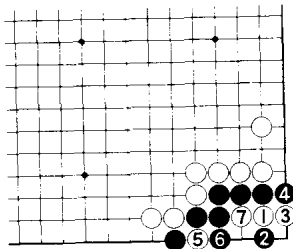
A hane has been added to the left side of Black's group. For this reason, Black's group is going to provide stubborn resistance, and White is left with only one method of killing it. Where is White's first move?



Solution 1

Solution 1. Belly attachment

The only move is the belly attachment at White 1. When Black plays 2, White's descent to 3 is a good move. If Black continues at 'a', White turns at 'b', after which he can get a five-space big eye. If White carelessly jumps diagonally to 'b' with 3, Black throws in at 3 and gets a ko.

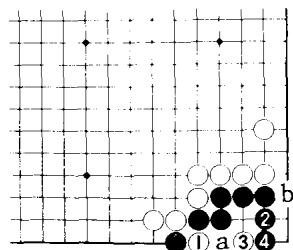


Solution 2

Solution 2. Three-space big eye

After White's attachment at 1, Black's attachment at 2 is a response which displays tenacity. In response, White's descent to 3 is important. After Black 4, White 5 and 7 make a three-space big eye.

Should White play 3 at 4, Black gets a ko with 3.



Failure

Failure. An obstacle

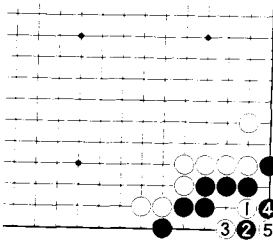
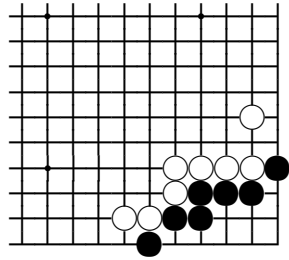
Don't jump to the conclusion that even White 1 will kill the group. Black's turn at 2 is a good move, and in response to White's placement at 3, Black blocks at 4, so White cannot connect at 'a'. The existence of this variation is what makes the presence of the marked black stone so tricky.

Should Black capture the stone at 'a' with 2, White hanes at 'b' and kills him.

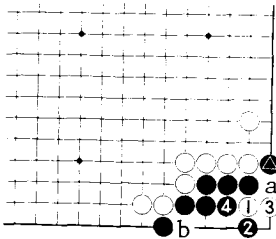
Pattern 9

White to play and make a ko

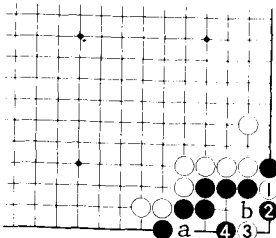
Black hanes have been added to both sides of the black group, making it even more tenacious. White, if it's his turn, will be successful if, rather than unconditionally killing Black, he gets a ko.



Solution



Failure 1



Failure 2

Solution. Attachment and placement

White should play the attachment at 1. When Black plays 2, White's block at 3, followed by Black 4 and White 5, gives a ko.

Instead of 1, a placement at White 3 is also a vital point. Next, with Black 2, White 1 and Black 4, we return to the same shape as before.

Failure 1. Cannot link under

After White 1 and Black 2, the descent at White 3 aims to kill Black unconditionally, but because of the presence of the marked black stone, it doesn't work in this shape. That is, Black responds calmly at 4 and the two white stones can't link under. If Black connects at 'a' instead of 4, then White 'b' kills him.

Failure 2. An awful move

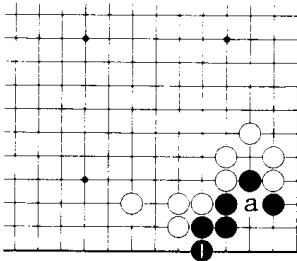
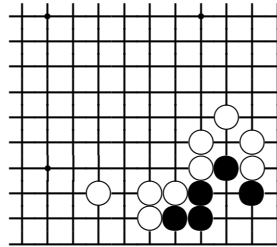
White's throw-in at 1 cannot be called a good move. When Black captures at 2, there is no way to make a nakade inside the black group. If White tries 3, Black answers at 4.

Also, if White plays 1 at 'a', Black 'b' is a good move. This sequence has already been explained in the last pattern.

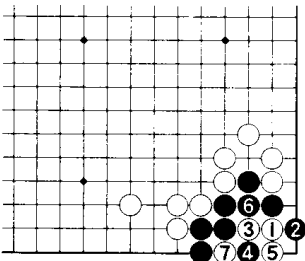
Pattern 10

Black to play and get a ko

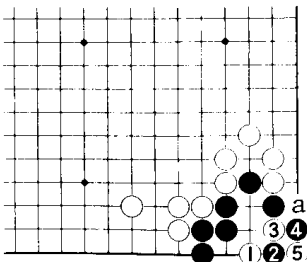
You can consider this a practical application problem for what we've covered so far. This shape comes up in actual fighting and is *very* difficult to handle. There are a number of possibilities for the first move, so you should investigate them thoroughly



Solution 1



Solution 2



Solution 3

Solution 1. The best move

Black's best move is the descent at 1. How White attacks in response to this is shown in the next diagram.

Before that, as an example of the simplest possible mistake, we have a black move at 'a'. After that, a white play at 1 kills Black. This is just common sense.

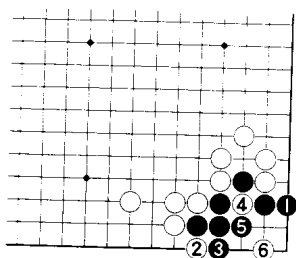
Solution 2. Clamp

After the last diagram, White's clamp at 1 is a powerful move. When Black plays 2, White extends at 3 and sets up a ko shape. Black 4 and 6 start a ko, as does simply connecting at 6; next, either White 4, Black 5 or White 5, Black 4 create a ko.

Solution 3. Placement also possible

One more possibility exists: White's placement move at 1. Black must attach at 2, then White 3, Black 4, and sure enough, ko.

If Black extends at 3 instead of 2, then White 'a' and Black 4 follow; White 2 now produces a nakade, so Black is dead.

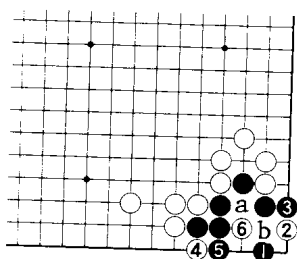


Failure 1

Failure 1. Not this descent

Lets investigate some other possibilities. First is the descent at Black 1, but, when White reduces the black group with 2 and 4, and Black plays 5, the white play at 6 comes into the picture.

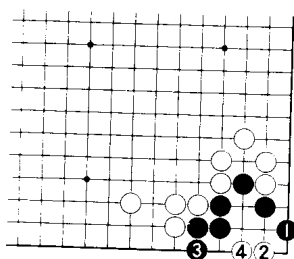
Not any descent will work: Black 1 is on the wrong side.



Failure 2

Failure 2. It's powerful, but...

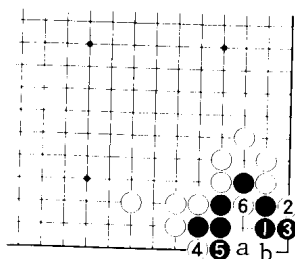
Black 1 certainly looks powerful, but after White 2 strikes at the vital point, Black cannot make life. After Black 3, White's hane at 4 is a calm attack. When Black plays 5, White attaches at 6, and now if Black 'a', White's connection at 'b' produces a three-space nakade.



Failure 3

Failure 3. One more vital point

Black's diagonal play at 1 is undoubtedly at one of the vital points. However, there is one more vital point and when White occupies it with 2, there is no way to live. Even if Black descends at 3, White's extension to 4 makes this a nakade. If Black plays 3 at 4, White 3 kills him.



Failure 4

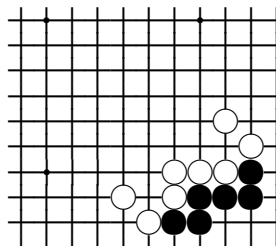
Failure 4. Reducing

Black 1 also looks quite feasible. In response to this, White 2, 4, and 6 in order, narrowing Black's area, is a clever line of attack. However, the order of moves is important. If instead of 4, White first throws in at 6, Black is able to live with Black 4, White 'a', Black 'b'.

Pattern 11

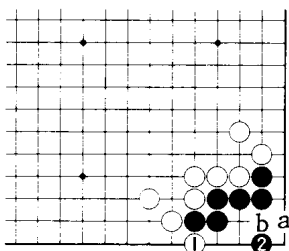
Black is alive

Legs have been added to the base on both sides of the original L-shape. This shape is alive, even if White plays first. This is an important area of fundamental knowhow, so let's investigate it briefly.



Variation 1. Correct response

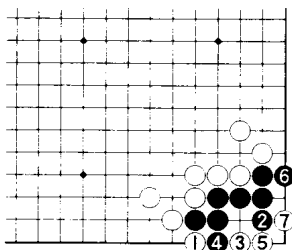
Lets take a look at a number of possible avenues for White on his turn. First is the hane at 1. In response, the jump to Black 2 is correct. After this, the vital point has to be at 'a', but this is easily answered by Black 'b'.



Variation 1

Variation 2. Alive, but...

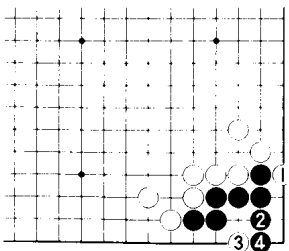
In response to White's hane at 1, Black can also live by turning at 2. However, White has the placement at 3, so it's a little complicated. At White 5, Black descends to 6. Up to White 7 is a seki. Of course, if Black is alive in both cases, then having territory, as in the previous diagram, is better.



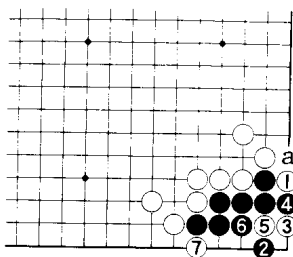
Variation 2

Variation 3. Hane on the opposite side

What about if White plays a hane on the opposite side? In this case, Black's turn at 2 is a straight forward way to live. The only remaining vital point is the placement at 3, but Black blocks at 4 and has no problems.



Variation 3

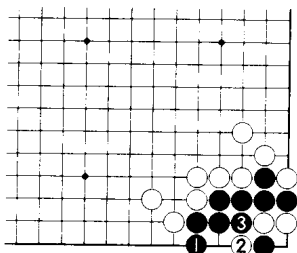


Failure

Failure. Dangerous

What about jumping to Black 2 in response to White 1?

If Black blocks at 6, after White's placement at 3 and push at 5, White plays a hane at 7. Now, unless Black's capture and threat to extricate himself at 'a' is sente, he dies because of a shortage of liberties.

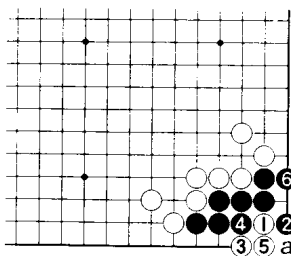


Variation 4

Variation 4. Alive

Black 6 in the previous diagram is a mistake. If Black descends at 1, as shown here, then in response to White 2, he can play atari at 3, and despite his shortage of liberties he is alive.

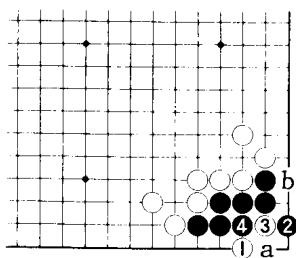
In any case, by following the simple life-making procedure of Variation 3, there can be no mistake.



Variation 5

Variation 5. Beginning inside

Next, what about beginning inside, with White 1? Black's hane at 2 is good enough. White 3 aims at starting a ko at 'a', but Black can play the atari at 4 first, eliminating any possibility of ko, then descend to 6 and live.



Variation 6

Variation 6. The placement

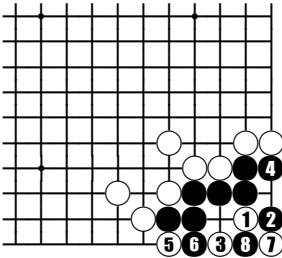
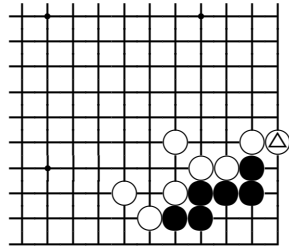
The white placement at 1 is also a confusing move. The diagonal play at Black 2 is a calm answer. If White 3, Black plays atari at 4, and things revert to the previous diagram.

Instead of 3, if White extends to 'a', Black answers at 'b'.

Pattern 12

White to play and get a ko

White's descent at the marked white stone must be given some close attention. If it's White's turn, he does have possibilities now. But the result is only a two-step ko, so Black is not going to suffer all that much.

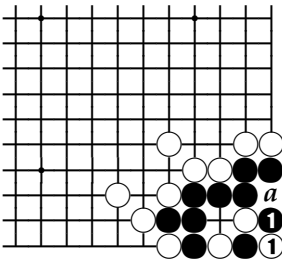


Solution 1

Solution 1. Attachment

White makes the attachment at 1 and answers Black's hane at 2 with a diagonal play at 3. When Black plays 4, the hane at 5 and throw-in at 7 produce a ko. In the middle of this sequence, at Black 4, there is an important variation, but that is for later.

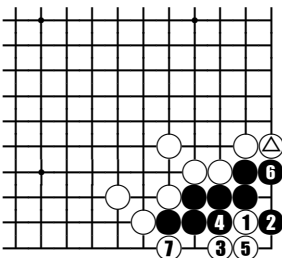
By the way, what kind of ko is this?



Solution 2

Solution 2. Two-step ko

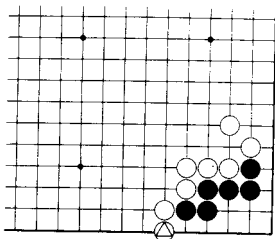
White has made a ko threat somewhere, and recaptured at 1. If White could make one more move and resolve things, then this would be a direct ko, but he can't. After White takes at 'a', the ko will be fought all over again. In other words, it's a two-step ko.



Variation

Variation. Black dies

After White 1 to 3, if Black decides to *play* at 4, the potential for ko is erased, but, when Black plays 6, White hanes at 7 and because of his shortage of liberties, Black can no longer play in at 'a'. It's when this position develops that the marked white stone make its presence felt.

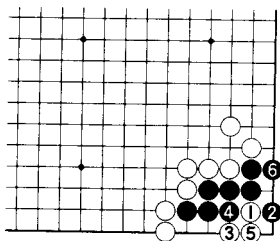


Reference 1

Reference 1. Descent on the opposite side

What about the case when White has descended with the marked white stone? In truth, this descent is powerless.

There should be no mistake about which descent will have an effect on Black's position.

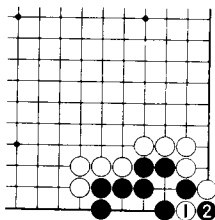


Reference 2

Reference 2. Alive

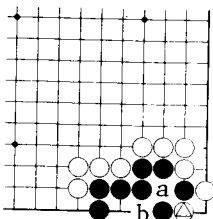
Lets try the attachment at White 1. After Black 2 and White 3, Black can play atari at 4. If White 5, Black descends at 6. There are no obstacles to Black's living.

Two-Step Ko



Reference 2

The situation in *Diagram 1* comes up often in actual play and is typical of two-step ko shapes. The ko fight starts with White's throw-in at 1 and Black's capture at 2.



Reference 3

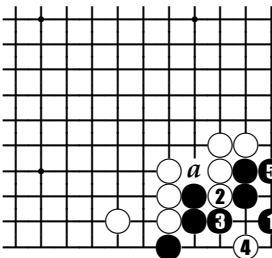
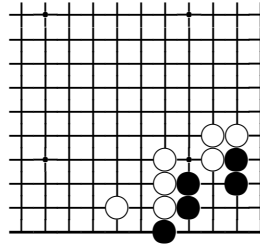
The shape in *Diagram 2* is the result of White's playing a ko threat somewhere and retaking at 1. After this, White cannot resolve the ko by making one more move in this area. In order to win this ko, White must further take the ko at 'a', then capture at 'b' to settle things. Literally, it's a ko of two steps, and to that extent Black has a lighter burden than he would if it were a direct ko.

Pattern 13

Black to play and live

As we move from the basic patterns to the practical applications, the shapes will change little by little.

This black group is a somewhat unsatisfactory shape, but if it's Black's turn, he can live. The hane on the left side is his lifeline.

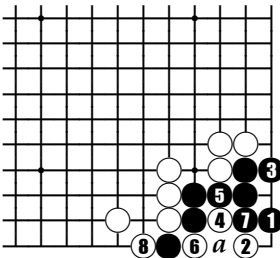


Solution 1

Solution 1. Diagonal play

Black's diagonal move at 1 is a good play. White's push at 2 and placement at 4 are at the vital points, but securing an eye with Black 5 is good enough.

The open liberty at 'a' is also coming to his rescue. If this liberty were filled in, then the cut at 'b' would kill Black

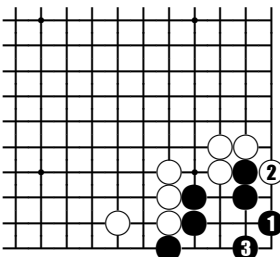


Solution 2

Solution 2. Turning the tables

After Black 1, you might also think of the placement at White 2 Black 3 is forced and with White 4 and 6, you might, for an instant, think it is ko. However, it is not ko; Black fills in with 7 and 9 and turns the tables on White, catching two white stones through a shortage of liberties.

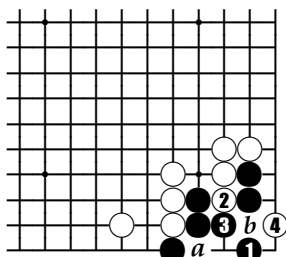
Of course, in actual play you would capture once with 7 at 'a'.



Solution 3

Solution 3. The 2-1 point

After Black 1, if White hanes at 2, Black is solidly alive with 3. Black 1 and 3 are both at the 2-1 vital points. As a rule, if you play at two vital points, you will be alive.

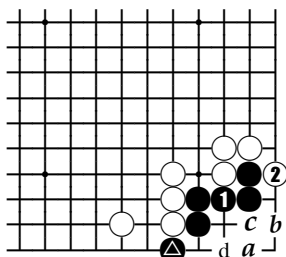


Failure 1

Failure 1. Shortage of liberties

What about playing at the other 2-1 point?

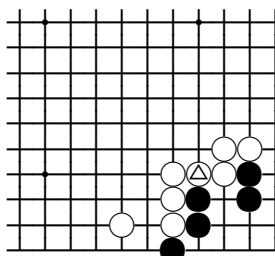
White has the push at 2 and placement at 4. At this point, Black would like to continue by securing an eye at 'a' but can't because the two black stones on the opposite side are short of liberties; if White cuts at 'b', Black is dead.



Failure 2

Failure 2. Connecting

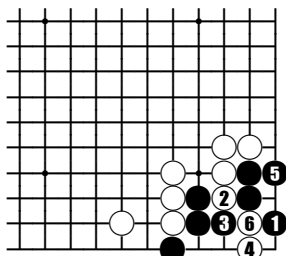
How about connecting calmly at Black 1? Unfortunately, in this position, Black is dead after White's hane at 2. Continuing, if Black 'a', White 'b'; if instead Black 'c', White 'd'. In either case, the marked black stone is useless.



Reference 1

Reference 1. The liberty is filled in

This diagram differs from the basic pattern in that Black's liberty has been filled in by the marked white stone. For this reason, Black is dead; there is no way for him to live.



Reference 2

Reference 2. The cut is successful

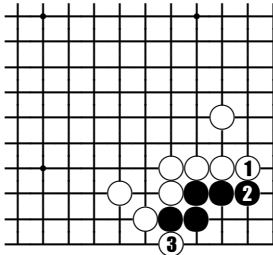
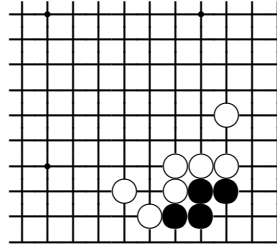
Black tries the diagonal play at 1, but White plays at 2 and 4. When Black plays 5, White's cut at 6 is successful.

Playing White 2 directly at 4 also kills Black.

Pattern 14

White to play, Black dies

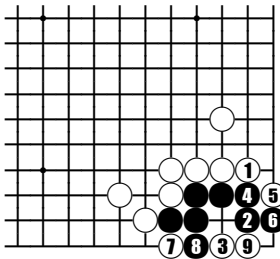
The lower edge of Black's shape is not clearly defined. The problem is how to settle things in that area. You should use what you have learned thus far to solve the problem.



Solution 1

Solution 1. Descent

There's no reason to think of something complicated. White's descent at 1 leads Black into a dead shape. If Black blocks at 2, White simply plays a hane at 3.

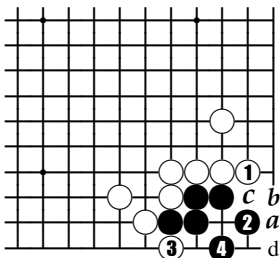


Solution 2

Solution 2. Retreat

In response to White 1, Black's retreat to 2 may be the most troublesome move for White. However, the vital point is readily apparent, and White's placement at 3 kills Black. If Black plays at 4, White 5 and 7 narrow Black's eye space and 9 kills the group.

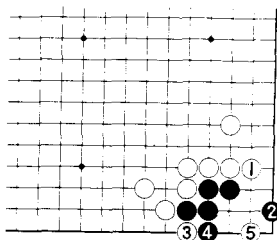
If Black plays 4 at 9, White answers at 6.



Failure 1

Failure 1. Carelessness

After White 1 and Black 2, the hane at White 3 is careless. Black's step down to 4 is a good move, so he lives. After this, even if White attaches at 'a', the sequence Black 'b', White's, Black 'd' lets Black live.

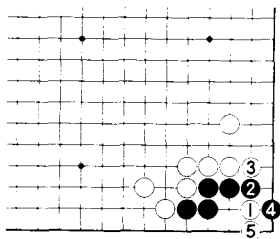


Solution 3

Solution 3. A fraud

After White 1, Black 2 can also be a somewhat confusing response. However, calmly playing a hane at 3 is good enough. If Black continues with 4, the placement at 5 limits Black to only one eye.

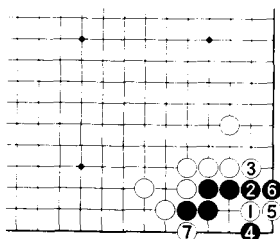
White can also play 3 immediately at 5.



Solution 4

Solution 4. Beginning with a placement

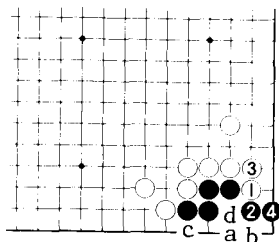
Going back to the very beginning, White can also begin with the placement inside at 1 here. After Black 2, White blocks at 3 and Black's situation is hopeless. If Black tries 4, White descends at 5.



Solution 5

Solution 5. Rejecting ko

After White 1 to 3, should Black attach at 4, White must be careful how he responds. He must, without fail, descend to 5. Then after Black 6, playing a hane at 7 kills the black group. If White carelessly tries to link under with 5 at 6, Black throws in at 5 and gets a ko.



Failure 2

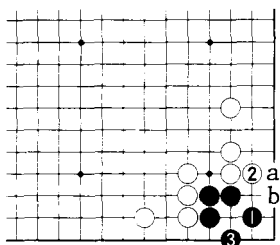
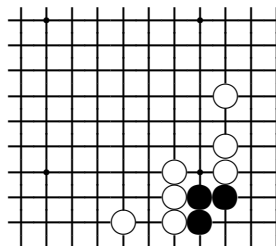
Failure 2. Hane and connect

This is a classic example of a White failure. If White plays the hane and connection of 1 and 3, then by descending at 4, Black survives. Even if White next plays at 'a', after Black 'b', White 'c' and Black 'd', White's stone is captured.

Pattern 15

Black to play and live

Black's shape doesn't look very promising, but it is surprisingly resilient. If he should miss playing at the vital point, however, he'll die quickly. This is a problem which vividly demonstrates the power of the vital point

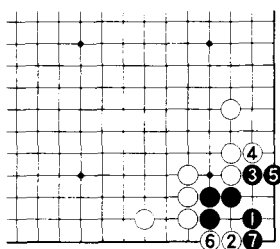


Solution 1. Retracting

The vital point at 1 is Black's only move. After White confines him with 2, Black makes an eye with 3. Black has managed to live very efficiently with a minimum number of moves.

If White plays 2 at 'a', Black b' is good enough.

Solution 1

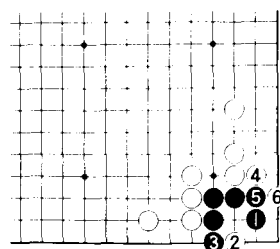


Solution 2. Responding to the placement

After Black 1, let's consider White's placement at 2. Black expands his area with the hane at 3 and after White 4, simply descends to 5. Should White link under at 6, Black will block at 7.

If White plays 4 at 6, Black again blocks at 7.

Solution 2

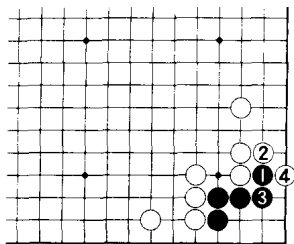


Failure 1. Defensive error

After White's placement at 2, Black must not become flustered and intercept at 3. If he does, White descends at 4 and Black dies.

Be sure not to forget that instead of 3, Black must play a hane at 4.

Failure 1

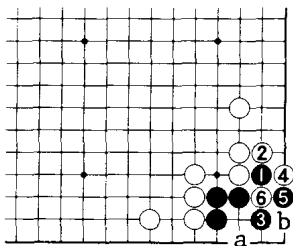


Failure 2

Failure 2. Mistakes on both sides

If Black thinks he'd better hurry up and hane at 1, he makes it impossible for himself to live. White blocks at 2; if Black connects at 3, White's hane at 4 kills the group.

However, White 2, and Black 3 are both mistakes, as will be demonstrated in the next few diagrams.

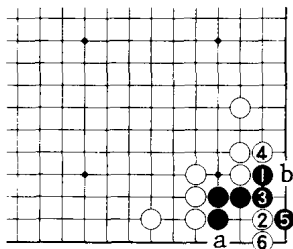


Failure 3

Failure 3. Ko

After Black 1 and White 2, Black must step down to 3. White will play atari at 4, forcing Black to play at 5, which gives a ko.

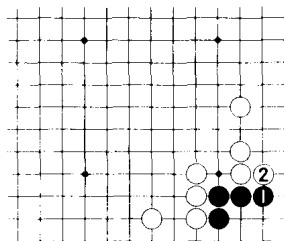
If Black now decides to play at 'a' instead of 5, White attaches at 'b' and Black is dead unconditionally.



Failure 4

Failure 4. Unconditional

The fact of the matter is, Black 1 is such a bad move that it should not even yield a ko. White's placement at 2 is a good answer, after forcing Black to connect at 3, blocking at 4 is the best continuation. In response to Black 5, White descends to 6, making miai out of 'a' and 'b'.



Failure 5

Failure 5. Uninspired

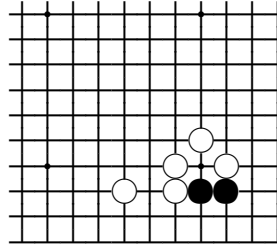
The worst possible play is Black's descent at 1, a totally unimaginative move. White, of course, simply blocks at 2 and Black is dead.

When Black makes a move like this, it becomes apparent that he knows nothing about the concepts of life and death in go.

Pattern 16

Black to play and live

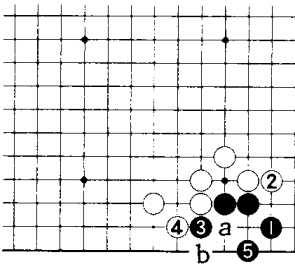
It certainly doesn't appear as if these stones will be able to live, but by playing his first stone at the vital point, Black can hope to save his stones. It's important to try everything in your power, right up to the end.



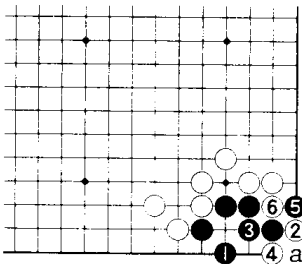
Solution 2. Two good moves

The vital point for the first move is Black 1. If White descends at 2, Black's hane at 3; after White blocks at 4, the diagonal play at 5 is important. If White plays atari at 'a', Black has the descent at 'b', which secures two eyes.

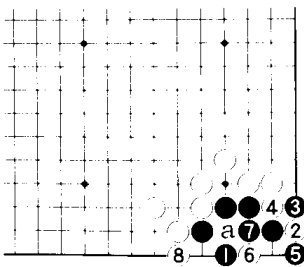
Instead of Black 5 –



Solution 1



Failure 1



Failure 2

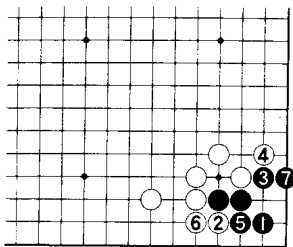
Failure 1. Open connection

Black would like to play the open connection at Black 1 here, but if he does, he won't be able to live unconditionally.

White can play the attachment at 2 and in response to Black 3, continue with the hane at 4. After Black 5 and White 6, a ko fight develops at 'a'. In this position, ko is a failure for Black.

Failure 2. Black dies

What if Black answers White 2 with 3 and 5, capturing one stone? In this event, the placement at White 6 becomes the vital point. Now, even if Black connects at 7, White descends to 8 and Black can no longer make an eye at 'a'. In either case, Black 1 is a mistake.

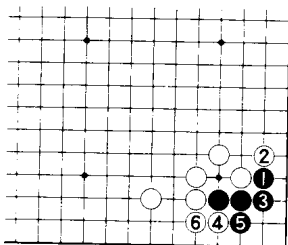


Solution 2

Solution 2. White plays a hane

After Black's diagonal play at 1, if White plays a hane at 2, living is simple. Following Black 3 and White 4, Black can force with 5 and make life by descending at 7.

Even if Black makes the empty triangle shape at 5 first, he still cannot be kept from living.

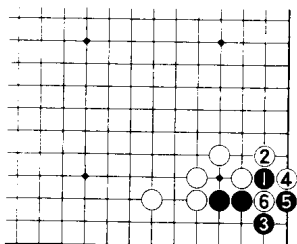


Failure 3

Failure 3. Hone and connect

If Black begins by playing hane and connection at 1 and 3, he makes a shape which is no longer alive. White will respond with the hane and connection at 4 and 6, and Black cannot get enough space to make life.

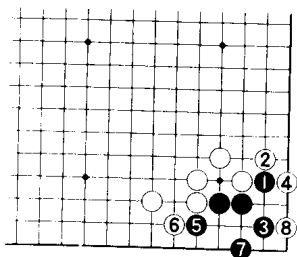
Instead of 4, White can also simply descend to 6.



Failure 4

Failure 4. Ko

What about if Black begins with the hane at 1 and then steps down to 3? While Black 1 looks to be a productive move, it's actually a poor play. When White plays atari at 4, Black is forced to block at 5 and all he gets is a ko.



Failure 5

Failure 5. A superfluous play

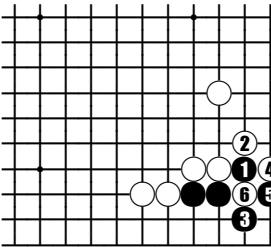
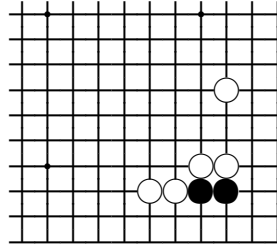
After Black 1 to White 4 of the previous diagram, let's take a look at what happens if Black tries the technique of Solution 1, by playing 5 and 7. Unfortunately, this time White has the attachment at 8, so Black ends up dead.

Black 1 turns out to have been superfluous.

Pattern 17

Black to play and make a ko

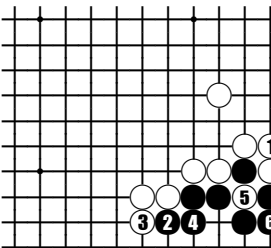
This looks like a shape you might see in actual play. It's similar to the previous pattern, but you should note carefully that the outside liberties of Black's two stones have been filled in. As might be expected, the stones can no longer live unconditionally.



Solution

Solution. The open connection

In this shape, playing a hane at 1 and answering White's block at 2 with the open connection of Black 3 is the only possibility. In response to White's atari at 4, Black blocks at 5 and White 6 starts a ko fight.

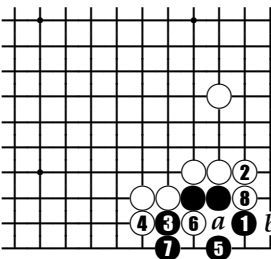


Reference 1

Reference 1. Black lives

In the previous diagram, White has no choice but to fight the ko, but let's suppose he connects at 1. What happens?

Black can simply hane and connect at 2 and 4. When White captures at 5, Black connects at 6 and has a living shape. Consequently, unless White is totally unable to fight the ko, White 1 is strange.

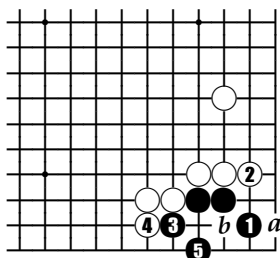


Failure 1

Failure 1. Atari

Lets take a look at Black 1, the move which allowed him to live in the previous pattern.

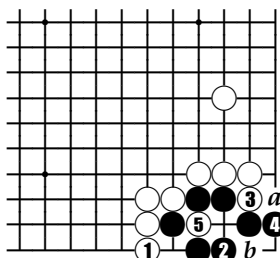
After White 2, Black tries the technique of Black 3 to 5. This time, however, White cuts at 6 and puts the two black stones in atari. Next, after Black 'a' and White 'b', Black is dead.



Failure 2

Failure 2. Open connection

After Black 1 and White 2, what about the hand and open connection of Black 3 and 5? If White continues at 'a' and Black connects at 'b', making a ko, then this would also be a possible solution. That is not, however, the way things will proceed. White has the clever attack shown in the next diagram.

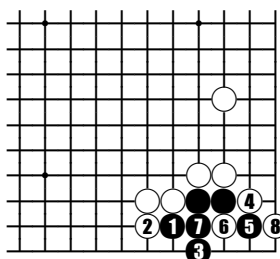


Failure 3

Failure 3. Descent kills

After the previous diagram, White's descent at 1 is a deadly move. After Black fills his gap at 2, White plays 3 and, in response to Black's descent to 4, throws in at 5, turning the left side into a false eye.

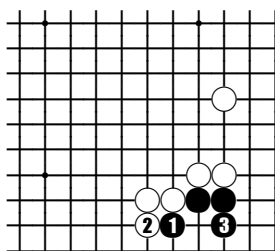
If instead of 2, Black plays 3, you should verify for yourself that after White 'a', Black 4, and the attachment at White 'b', Black is dead.



Failure 4

Failure 4. Straightforward

What about beginning with the hane and open connection of Black 1 and 3? This, however, is not a very resilient shape. White's hane at 4, cut at 6, and atari at 8 kill Black easily.



Reference 2

Reference 2. Turn

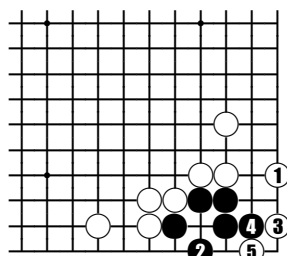
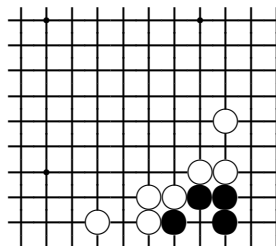
After Black 1 and White 2, take a look at Black's turn at 3. This is quite a tenacious shape.

How should White attack this group? If White had a stone at 'a', then without bothering to make a ko, he would simply capture the black group unconditionally. Let's deal with this in our next pattern.

Pattern 18

White to play, Black dies

Here we're going to deal with one of the variations of the previous pattern independently. If it's White's turn to play, then Black is dead. Starting a ko is the most vulgar play possible.

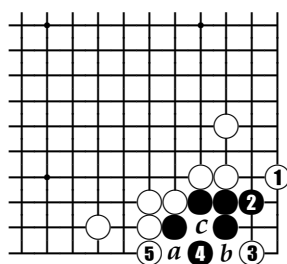


Solution 1

Solution 1. One-space jump

White's one-space jump to 1 is clever. If you don't learn this move, you cannot capture the group unconditionally. When Black plays 2, White jumps to 3 and in response to Black 4, White plays a hane at 5. This is not a ko; Black is dead.

I hope you can appreciate the role White 1 is playing in this position.

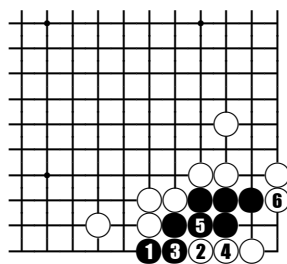


Solution 2

Solution 2. Placement at the vital point

If, in response to White 1, Black descends to 2, White 3 is the vital point. When Black tries to make an eye with 4, White 5 is a calm response. Since 'a' and 'b' are now miai, 'c' will not become an eye for Black.

Further, instead of Black 4 —

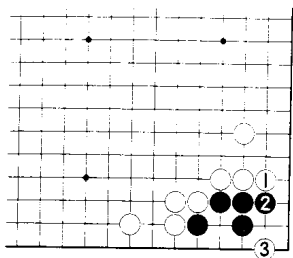


Solution 3

Solution 3. Bagging your catch

Playing a hane at 1 is a stubborn play, but with the strong moves of White 2 and 4, White will be able to complete his capture. Black has no choice but to connect at 5, so pushing in at 6 is good enough.

Should White block with 2 at 'a', Black can make an eye at 2 and persevere with a ko.

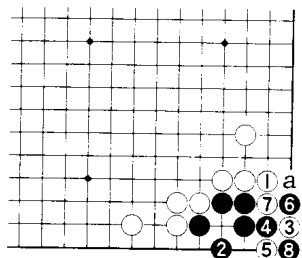


Failure 1

Failure 1. Descent

White's descent at 1 is probably the ordinary approach. If Black responds to this by blocking at 2, then White's placement at 3 kills him.

Black 2 is unimaginative. Now both sides have made a mistake.

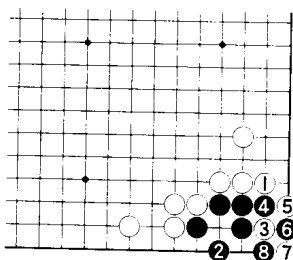


Failure 2

Failure 2. The difference

In response to White's descent at 1, Black's best move is to make an eye at 2. When White slides in to 3, Black resists at 4. White can play 5, but Black blocks at 6 and gets a ko.

You should be able to see the difference between this and having White 1 at 'a'.

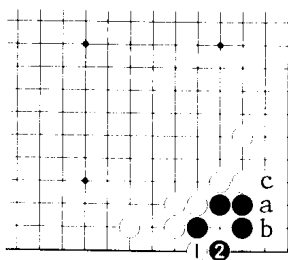


Failure 3

Failure 3. A different method

After White 1 and Black 2, White can also play the attachment at 3. After Black 4 and White 5, Black throws in at 6 and once again gets a ko.

In either case, a ko is a failure for White.



Failure 4

Failure 4. Undistinguished

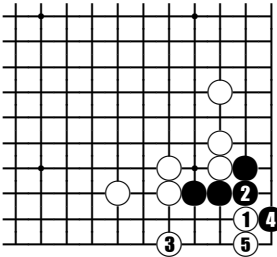
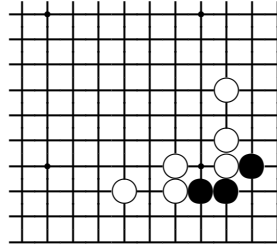
The most common mistake for White is playing the atari at 1. Black will of course block at 2 and easily get a ko.

In addition to what we've covered thus far, White could play 1 at 'a', but when Black blocks at 'b' and White connects at 'c', Black can live by playing 2, so this is obviously a failure for White.

Pattern 19

White to play, Black dies

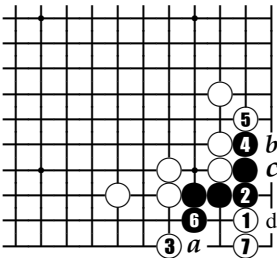
If White plays normally, this will become a ko. If he attacks poorly, Black will live. However, if he attacks cleverly Black is unconditionally dead. The secret is a combination play with the first and third moves.



Solution 1

Solution 1. Jump to the first line

First is the peep at White 1, then when Black connects at 2, jumping down to the first line at 3 is tesuji. When Black plays 4, White descends to 5. Notice that the two stones in the corner are connected to White 3. If Black plays 'a', White answers at 'b', then if Black 'c', defending at White 'd' is good enough.

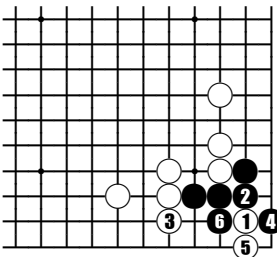


Solution 2

Solution 2. Black tries to expand his base.

After White 1 and 3, what if Black tries to expand his eye space with 4 and 6? In response, White's descent to 7 is easy to understand. If Black continues at 'a', White 'b', Black 'c', and White 'd' follow.

Instead of 7, White could also either play a hane at 'b' or descend to 'd'.

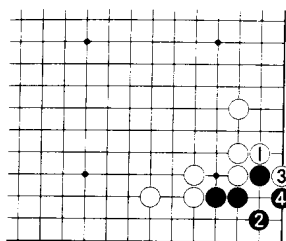


Failure 1

Failure 1. White cannot connect outside

After White 1 and Black 2, why is descending to 3 no good? This question is the point of this particular pattern.

In response to Black 4, White descends to 5, but Black blocks at 6 and White's two stones cannot connect to the outside. Because of this, Black ends up alive.

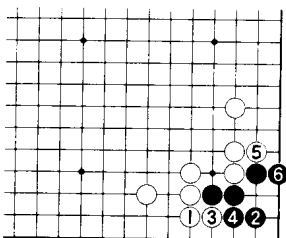


Failure 2

Failure 2. Ko

White's block at 1 is an ordinary move. Black plays the open connection at 2 and after White 3 and Black 4, a ko results.

In actual play, this is probably the result more times than not.

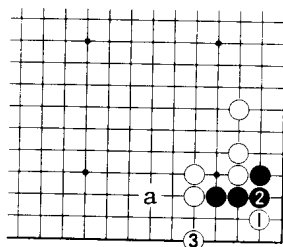


Failure 3

Failure 3. Descent

White's descent to 1 is a calm play, but it isn't successful. Black 2 is the vital point. After this, White can't do anything more than make the ordinary attacking plays of 3 and 5; up to 6, Black is alive.

If instead of 2, Black blocks at 3, White makes the placement at 2 and Black dies.

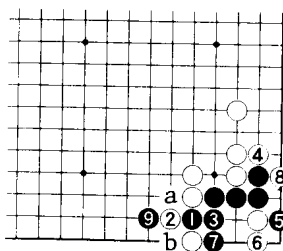


Reference 1

Reference 1. A requirement for White

In this pattern, attention must also be paid to the formation of white stones which surround the black group. To a certain extent, the perimeter must be secure.

For example, if there were no white stone at 'a', then the procedure of White 1 and 3 would not necessarily be perfect. Consider the next diagram...



Reference 2

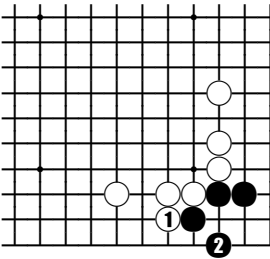
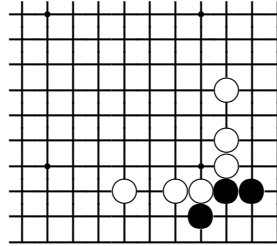
Reference 2. Bad aji

There is now room for a black response at 1 and 3. The moves from White 4 to 8 do produce, at least partially, a dead shape for Black, but Black's block at 7 makes the clamp at 9 possible. The continuation White 'a', Black 'b' will quite likely prove troublesome.

Pattern 20

Black is alive

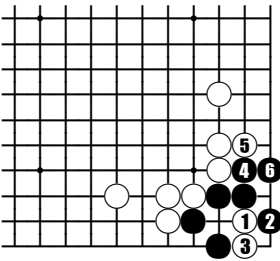
No matter how frail this black group appears, it is very efficiently alive. If only because this position comes up often in actual play, you should learn to recognize it as a basic living pattern.



Variation 1

Variation 1. The open connection

If we begin with White's turn, then White 1 is normal. Black's open connection at 2 makes good shape, making a group which is impossible to kill. Having said this, however, White can still launch an effective attack against the black group. Lets investigate this a little further.

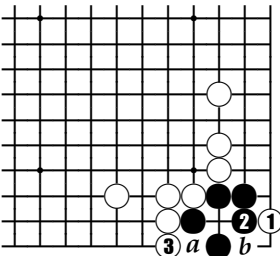


Variation 2

Variation 2. Responding to the attachment

After the last diagram, White 1 is the vital point for destroying the eye shape. In response, however, Black lives easily with the hane at Black 2, followed by Black 4 and 6.

There should be a better route for White than this.

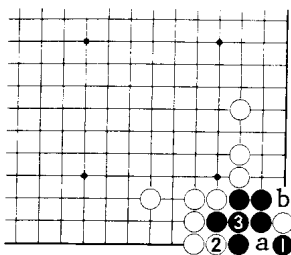


Variation 3

Variation 3. A troublesome play

The placement at White 1 can be troublesome for Black. If he's not careful, he could end up dead.

There is no other choice for Black 2, but how should Black respond to White's descent at 3? Playing at 'a' is rash since White will throw in at 'b' and force a ko.

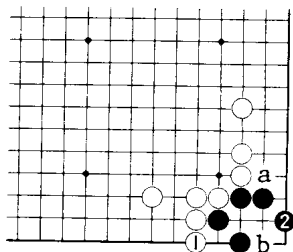


Variation 4

Variation 4. Squeeze play

Continuing from the previous diagram, throwing in with Black 1 is advisable. In response to White 2, Black can connect at 3, and when White captures at 'a', Black can atari at 'b' instead of fighting a ko.

Even if White uses 2 to capture immediately at 'a', Black 'b' is good enough.

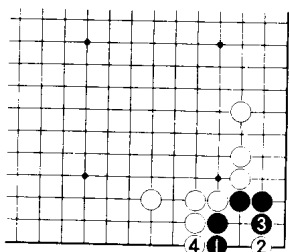


Variation 5

Variation 5. The diagonal move

White's quietly descending to 1 is also a play which Black needs to answer carefully. The diagonal move of Black 2 is correct, making *miai* of 'a' and 'b'.

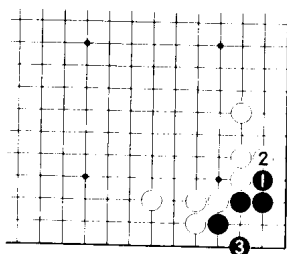
Black 2 is the only way for Black to be sure of living, so be careful.



Failure 1

Failure 1. A weak point

Instead of the open connection, what about descending to Black 1? This play, however, creates a weak point and when White plays 2, Black is at a loss. White will answer Black 3 at 4 and, needless to say, Black is dead.



Failure 2

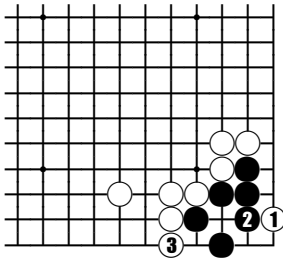
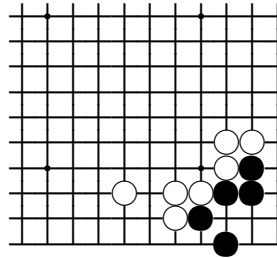
Failure 2. A bad move

Let's imagine that before making the hanging connection, Black forces by turning at 1 in sente. When White blocks at 2, Black plays 3. After this Black might well think he can live easily, but he is mistaken. Black 1 is a blunder. The reasons why will be the topic of the next section.

Pattern 21

White to play and get a ko

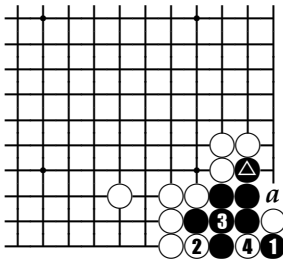
This is the position after Black has played the marked stone. If this stone were not present, Black would be alive, but as soon as he played this extra stone, he was no longer alive unconditionally. How should White proceed?



Solution 1

Solution 1. What's the difference?

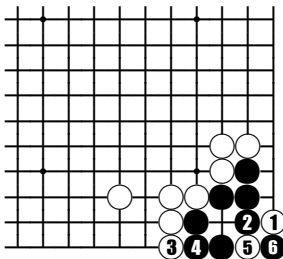
The placement at White 1 now works, and then has an opportunity. In response to Black 2, White descends to 3. We examined this sequence in the previous pattern as well, but something is different. The continuation after 3 is shown in the next diagram.



Solution 2

Solution 2. Ko

Black will throw in at 1, then when White plays 2, connect at 3. But now when White starts a ko with 4, Black can no longer plan to atari at 'a'. You should be able to see that the exchange of the marked black and white stones has created a shortage of liberties, which prevents Black from playing at 'a'.



Solution 3

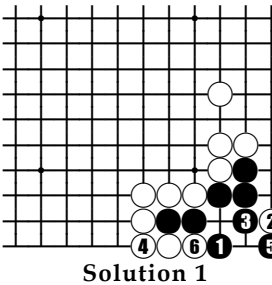
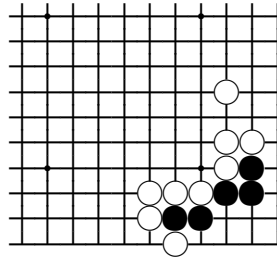
Solution 3. Starting the ko

After White 1 to 3, it should be noted that it's better for Black to connect at 4. This is because it forces White to throw in at 5 and lets Black take the ko first. In the previous diagram White was able to capture the ko first.

Pattern 22

Black to play and live

This shape looks similar, but there are some differences. You can imagine that White has just played a hane on the left side. Try to read out the order of Black's moves all the way to the end.

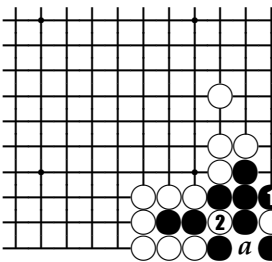


Solution 1

Solution 1. The same move

Black doesn't really have any other choice but to begin with the open connection at 1. The question is, what happens after White makes the placement at 2?

In response to Black 3, White will connect at the bottom with 4 and then after Black 5, push in at 6, but is Black really alive? Continuing in the next diagram –

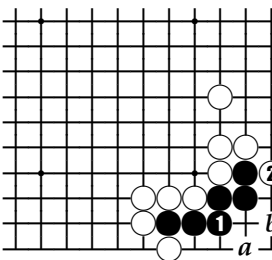


Solution 2

Solution 2. Recapture

Black must not connect to the right of the two stones. Instead he should simply capture a single stone at 1. Then, when White captures at 2, notice that Black can recapture with 3 to the left of 2. It's because of the possibility of this recapture that Black is alive.

Should Black connect at 2, White will start a ko by capturing at 'a'.



Failure

Failure. Tight connection

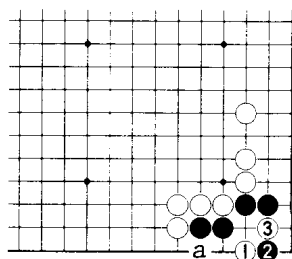
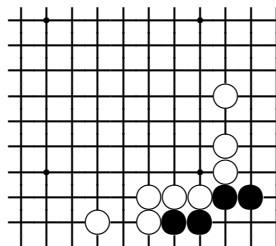
Connecting at 1 makes the black shape too simple. Once White plays the hane at 2 there is no way for Black to live. To continue, if Black 'a', White 'b'.

In most cases, the open connection creates much better eye-shape potential than a solid connection.

Pattern 23

White to play and get a ko

Once again the position has been slightly modified. This time the question is whether or not White can do anything if he gets to play first. With what you've learned thus far you probably realize that a simple move is not going to be successful.

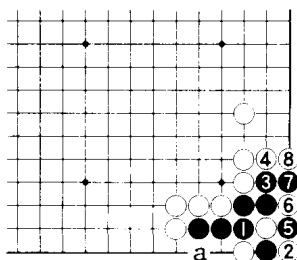


Solution 1

Solution 1. Placement

A straightforward play would be the hane at 'a', but then Black makes open connection at 1 and lives.

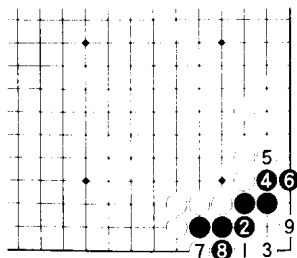
The solution is the placement at 1. When Black attaches at 2, White plays atari at 3. However, after this Black gets an approach-move ko.



Solution 2

Solution 2. One-step approach-move ko

After the previous diagram, once Black connects at 1, White is forced to capture at 2. Black 3 and 5 next are the right order. Black answers White 6 by blocking at 7, and when White plays 8, Black starts the ko. But even if Black decides to play elsewhere and let White play at 'a', it's still a ko, so this is a one-step approach-move ko.

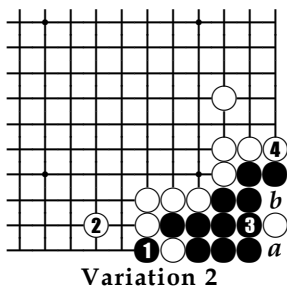


Variation 1

Variation 1. Connection

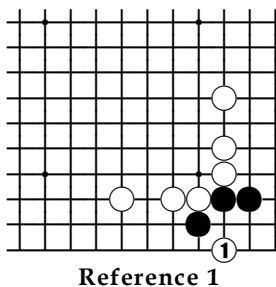
In response to White 1, let's look at what happens if Black connects at 2. White's only choice is to extend to 3. Black continues by expanding his base with 4 and 6, but White 7 to 9 make this a dead shape.

Since there is still one aspect of this shape which is unclear, let's investigate it a little further.



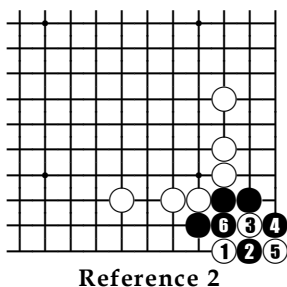
Variation 2. A struggle

Continuing from the previous diagram, even if instead of playing elsewhere, Black uses 1 to try to extricate his stones on the left side, defending at White 2 is good enough. When Black plays 3, White fills in one of Black's liberties with 4, so Black cannot squash White with 'a'. If Black captures at 'b', White recaptures and Black is still dead.



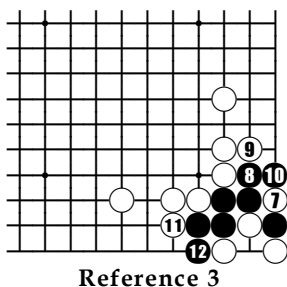
Reference 1. Take another look

This is Pattern 20 again. At the time we didn't discuss it, but what happens here if White makes the placement at 1? Since at the time 1 said 'Black is alive; ' it wouldn't do for this White 1 to give a good result. How should Black respond?



Reference 2. The same technique

Black answers White 1 with the attachment at 2 and White's atari at 3 with his own atari at 4, but he isn't trying to start a ko. In this case, when White captures at 5, Black can connect at 6. The sequence continues in the next diagram.



Reference 3. Living via double ko

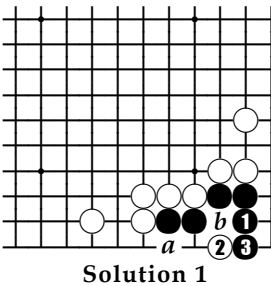
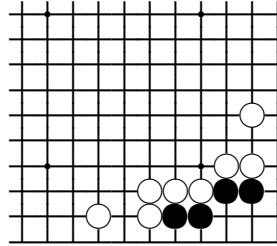
From White 7 to Black 10 is a one-way street, then Black answers White 11 by blocking at 12. This is not an approach-move ko. Rather, it's a double ko, so Black is alive.

You should try to determine for yourself exactly how this differs from Pattern 23.

Pattern 24

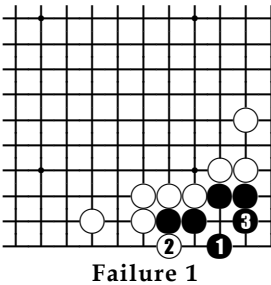
Black to play and live

Those of you who are familiar with this shape shouldn't have any particular problem with this pattern. If you're not, there are a number of possibilities for the first move, and finding the right answer may be surprisingly difficult.



Solution. Turning

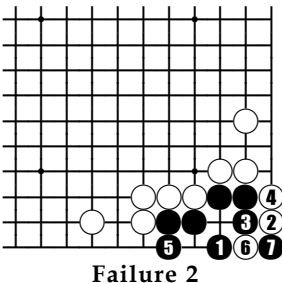
Turning at Black 1 is correct. White 2 is at the vital point for eye shape, but Black can simply block at 3. When White hane at 'a', for an instant it looks as if he's going to be able to link underneath; however, Black 'b' is good enough. Don't get rattled and use Black 3 to connect at 'b'. Also, if White plays a hane at 'a' instead of 2, then Black plays 2.



Failure 1. It's alive, but...

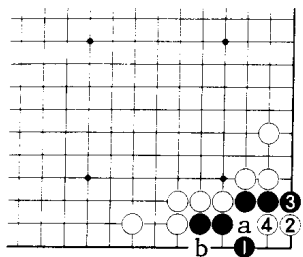
It doesn't look as if Black should have any problems if he begins with the open connection at 1, but this move has a defect.

White's hane at 2 is a bit hasty, since Black will play 3 and live. Instead of 2, take a look at White's response in the next diagram.



Failure 2. Ko

After Black 1, White's placement at 2 is a good move. If Black answers at 3, White connects to the outside with 4 and after this is left with a throw-in at 6 to make a ko. Let's just say that in playing the open connection at 1, Black misread the peculiarities of the corner.

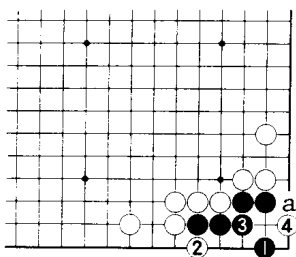


Failure 3

Failure 3. Unconditional death

After Black 1 and White 2, cutting White off from the outside with Black 3 leads to an unconditionally dead shape. White can crawl at 4 and when Black connects at 'a', White will play 'b'.

On the other hand, if White plays 2 at 4, then Black will ham at 2 and is absolutely alive.

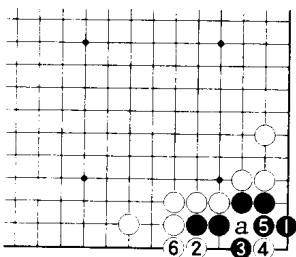


Failure 4

Failure 4. The 2-1 point

What about jumping down to Black 1? This is also one of the vital points for the life or death of this group; however, after White's hane at 2, Black loses his flexibility. White will answer Black 3 at 4, so Black is dead.

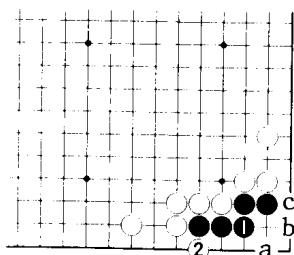
Furthermore, if White first plays 2 at 4 and Black plays 'a', White 2 also kills him.



Failure 5

Failure 5. The diagonal play

Black's diagonal move at 1 also hits at the 2-1 vital point, but it won't allow Black to live. White will hane at 2 and then after Black 3, the attachment at 4 becomes a good move. Next, Black plays 5, White connects at 6, and Black's 'eye' at 'a' comes unraveled. White can also play 2 at 4 if he wishes.



Failure 6

Failure 6. A foolish play

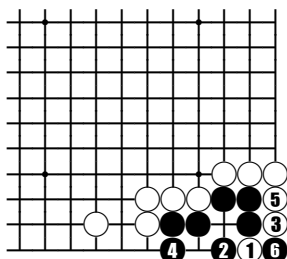
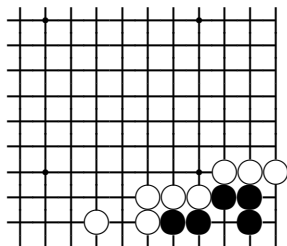
Black's connection at 1 is the least effective of all the possible plays. White plays a hane at 2 and there is not enough room in which to live. Next, if Black plays at 'a', White answers at 'b'.

In addition to this, a black effort which begins with the descent to 'c' is also quickly ended by a white hane at 2.

Pattern 25

White to play and get a ko

Black's shape is the same as in the solution to the previous pattern, but White has descended all the way to the edge, so we can no longer say that Black is alive just as he is. White should be careful about the selection of his first play.

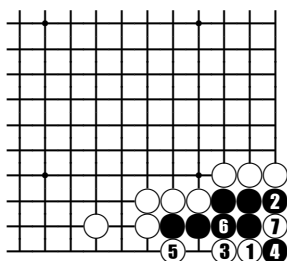


Solution 1

Solution 1. Attaching underneath

White attaches at 1; if Black plays 2, he hanes at 3. Because of his shortage of liberties, Black cannot play at 5, so he makes another eye at 4. White next connects at 5 and Black starts a ko fight with 6.

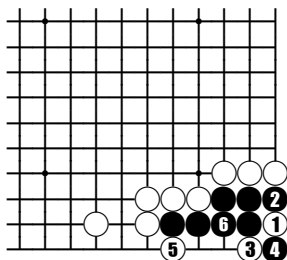
If Black uses 4 to capture at 6, then after White 5 and Black 4, White will have the opportunity to take the ko first at 1.



Solution 2

Solution 2. White starts the ko

In response to White 1, Black can also block at 2, however, after White 3, Black has no choice but to play in at 4, so White 5 to 7 produce a ko just like before. Comparing Black's position here to the previous diagram, if he wins the ko, he will have more territory than before, but this time White can take the ko first.



Failure 1

Failure. Wrong order

White also gets a ko with 1, but 1 would call this a failure because, compared to the previous diagram, Black gets to take the ko first.

After Black 4, if White extends to 'a', it's possible for Black to play elsewhere, so it doesn't simply revert to the previous diagram.

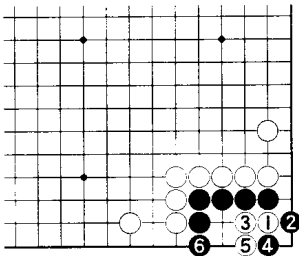
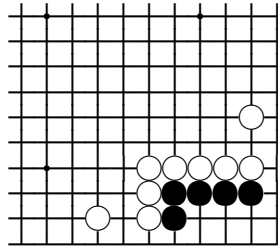
Part Three:

Eight-Space Eye Groups in the Corner

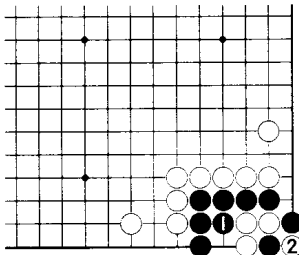
Pattern 1

White to play. A Ten-Thousand-Year Ko

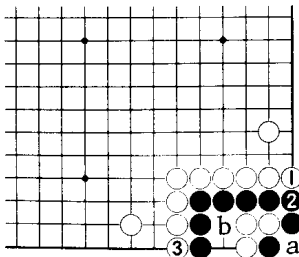
This shape is one space longer than the 'L-shape'. You need to learn that when all of the outside liberties of this group have been filled in, it's possible for White to play and make a ten-thousand-year ko. Of course, you'll also need to know what is meant by ten-thousand-year ko.



Solution



Reference 1



Reference 2

Solution. Belly attachment

White's only play is the belly attachment at 1. When Black plays 2, White crawls at 3. Black's hane at 4 is at the vital point, and Black then answers White 5 by descending to 6. This shape is known as the ten-thousand-year ko.

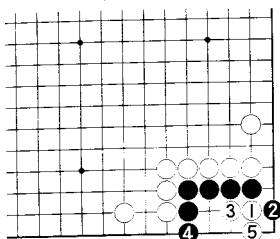
Now, let's examine the properties of this ko.

Reference 1. Suicidal

One of the special characteristics of this shape is that it is difficult for Black to make a move here. If Black fills in a liberty at 1, for example, White captures at 2 and starts a real ko for the life of the black group. Before playing 1, Black had better be very certain of his ko threats.

Reference 2. The right to choose

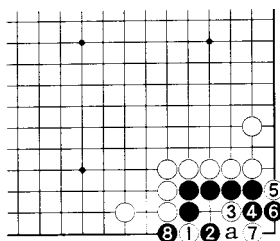
If Black decides not to make a move here, eventually White will fill in the outside liberties and capture at 'a' to start a ko. After this, if White wins the initial ko, he has the option of either connecting the ko, to get a seki, or filling in a black liberty at 'b' to make it a true ko.



Variation

Variation. Five-space big eye

After White 1 and 3, a black descent to 4 is a mistake. White's turn to 5 is the vital point. You can verify for yourself that the result will be a five-space big eye, so Black is dead.



Failure

Failure. Hane

Back at the beginning, playing a hane at White 1 is a mistake. After Black 2, White 3 is at the vital point, but after the continuation to Black 8, even if White connects at 'a', all he gets is a seki.

The Ten-Thousand-Year Ko

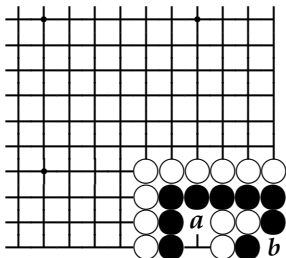


Diagram 1

Diagram 1 shows the completed ten thousand-year ko formation. Unless Black has a guaranteed plan for winning it, playing Black 'a' to force White to begin the ko fight at b' will only shorten his life.

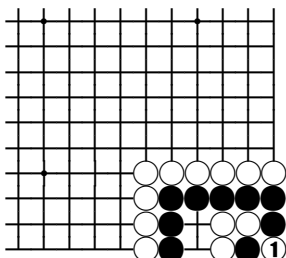


Diagram 2

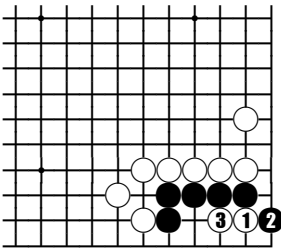
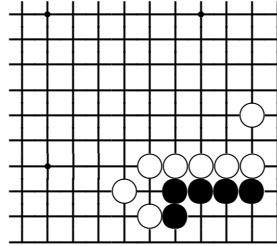
If White wishes to begin the ko, he will start with 'b', and later he can play at 'a' to start a real ko, but whether or not he will do so is his decision.

If neither side is certain of his ko threats, and both are unwilling to initiate such a fight, then White will capture at 1, as in *Diagram 2* and connect to the left of 1 to make a seki.

Pattern 2

Black is Alive

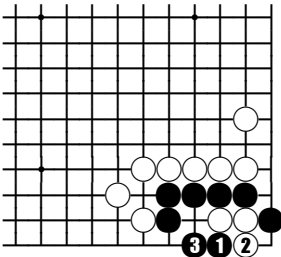
In this case, one of Black's outside liberties is open. Because of this, despite having sente, White will be unable to get even a ten-thousand-year ko. This comes up often in actual play, so make sure you thoroughly understand the difference between having and not having an open liberty.



Solution 1

Solution 1. The open liberty

If there is any possibility, White 1 is it. Just as before, Black hanes at 2, and White crawls to 3. At this point, Black's next play is important.

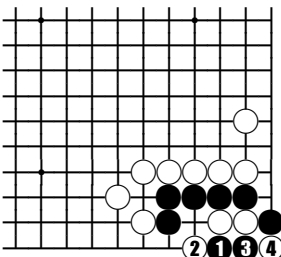


Solution 2

Solution 2. A white sente seki

Black's attachment underneath at 1 is a good move. When White plays 2, Black pulls back at 3 and gets a seki.

Strictly speaking, if it's White's turn, he can get a 'sente seki'. If this pattern comes up in an actual game, Black must count the corner territory as zero.

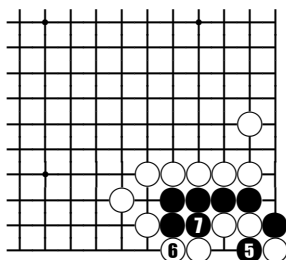


Variation 1

Variation 1. A clever move

When Black attaches at 1, what happens if White blocks on the other side? This variation is the highlight of this pattern.

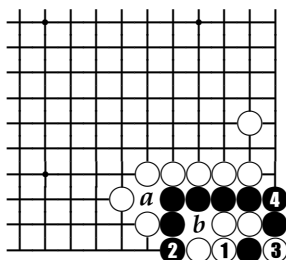
Black 3 is clever. Next, after White is 1 forced to capture the two stones with 4 –



Variation 2

Variation 2. Turning the tables

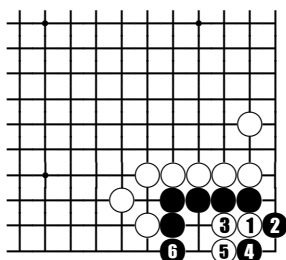
Black recaptures at 5. When White connects underneath at 6, Black catches White in his own shortage of liberties, so Black lives.



Variation 3

Variation 3. No answer

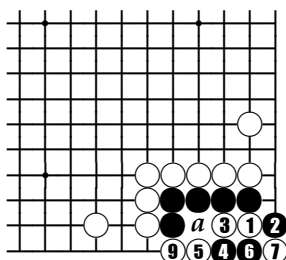
Even if White plays atari at 1, can't do anything. Black blocks at 2 and when White captures at 3, Black can simply connect at 4. Even if White fills in at 'a', Black can squeeze at 'b', thanks to the extra liberty on the outside.



Failure

Failure. Ten-thousand-year ko

After White 1 to 3, what about carrying on with 4 and 6 as in the previous pattern? This may be a relatively easy ko for Black to fight, because of his outside liberties, but common sense tells us that living with a seki is superior to a ko.



Reference

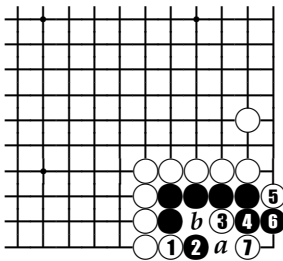
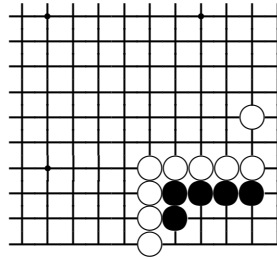
Reference. Shortage of liberties

Let's compare the position once again with the pattern in which Black is short of liberties. In this case, after White 1 to 3, attaching underneath at Black 4 doesn't work. When White connects outside with 9, Black cannot play the atari at 'a' because of his shortage of liberties.

Pattern 3

White to play, Black dies

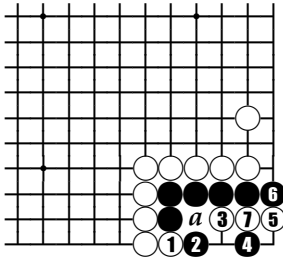
A white descent to the edge of the board has been added to the left side of the black group. This descent is powerful, so if White attacks persistently at the vital point, Black will die. The question is how to make use of the descent.



Solution 1

Solution 1. Turning

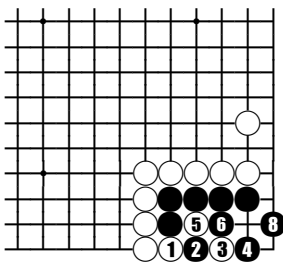
Turning at White 1, then answering Black 2 by striking at the vital point for making eye shape is good. Since Black must answer at 4, White narrows Black's base with 5 and plays hane at 7. In this position Black cannot play at 'a' and he still has a cutting point at b', so it isn't a seki. It's the dead three-space big eye.



Solution 2

Solution 2. Weak point

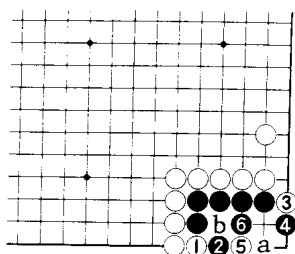
After White 1 to 3, Black 4 is the vital point, but White still has the strong move at 5. When Black blocks at 6, White connects at 7 and once again, because of his weak point at 'a', Black cannot survive.



Failure 1

Failure 1. Unconditionally alive

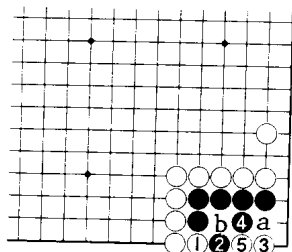
After White 1 and Black 2, White 3 is the wrong direction. Black can play the counter-attack at 4 and sacrifice one stone with 6 and 8. Since he can't even make a ko, this is a terrible mistake for White.



Failure 2

Failure 2. Ko

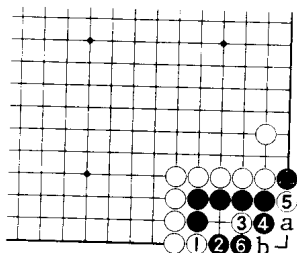
After White 1 and Black 2, the straightforward hane at 3 is possible. Black has no choice but to block at 4, so next White plays atari at 5. Next, due to a shortage of liberties, Black can't play the sequence Black 'a' White 'b', Black 6 and live, but he can play 6 to force a ko.



Failure 3

Failure 3. Placement

If a ko is all White wants, after White 1 and Black 2, it would be simpler just to make the placement at 3. Black has to defend at 4 and pushing in with White 5 starts a ko. Next would be Black 'a', White 'b'.

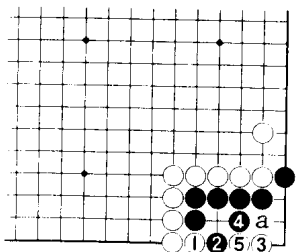


Reference 1

Reference 1. Hane and attachment

Here, the hane at the marked black stone has been added to the original pattern. What kind of variations does this produce?

After White 1 to 5, Black 6 is a calm answer. In this case, Black is absolutely alive. If Black captures a stone at 'a' instead, White will play hane at 'b' and Black is dead.



Reference 2

Reference 2. Ko

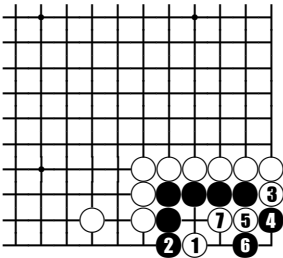
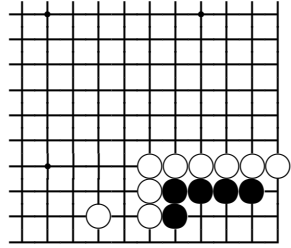
When the hane is present, the sequence from White 1 to 5, leading to a ko, becomes the best result for White.

If Black plays 4 at 'a', White still plays 5 and Black again plays at 4.

Pattern 4

White to play, Black dies

This time White has descended to the edge of the board on the right. This descent is even more powerful than the previous one, so if White plays first, he has more than one way of killing Black. Regardless, Black's problem will be his shortage of liberties.

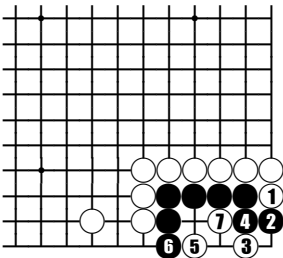


Solution 1

Solution 1. Unable to press

First is White's placement at 1. After Black 2, the cutting plays of White 3 to 5 are splendid. Even though Black tries to resist with 6 to get a ko, when White plays at 7, Black's shortage of liberties make it impossible for him to atari on the white stones.

Alternatively, instead of 5, White 7, Black 5, White 6 would make a five-space big eye.

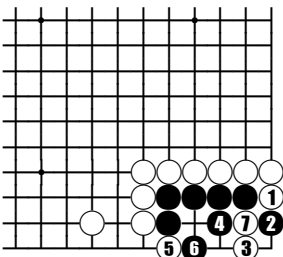


Solution 2

Solution 2. Begin with the turn

Turning at White 1 combined with the placement at 3 is another method of killing the black group. When Black connects at 4, White 5 and 7 produce a five-space big eye.

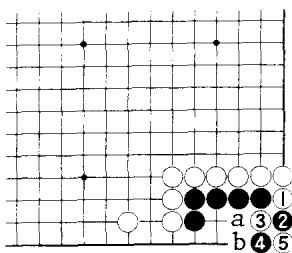
In this case, however, if White should make his placement at 5 instead of 3, Black will play at the vital point with 3 and live. If White wants to play 5, he must do it before he plays at 1.



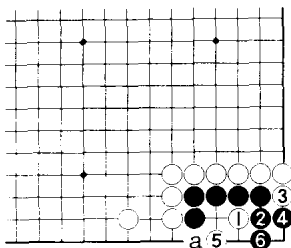
Solution 3

Solution 3. Shortage of liberties

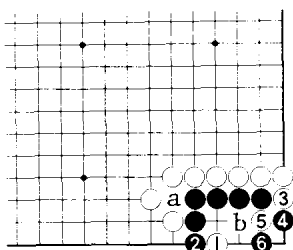
After White 1 to 3, turning at Black 4 is a strong move, but once again Black is plagued by a shortage of liberties. White hanes at 5, then cuts at 7. If he wishes, White can reverse the order of 5 and 7, since, even if Black answers 7 at 'a', White 5 still punishes Black for his shortage of liberties.



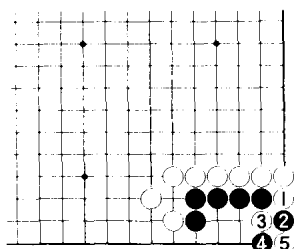
Failure 1



Failure 2



Reference 1



Reference 2

Failure 1. Ko

After White 1 and Black 2, cutting immediately at Black 3 doesn't work Black goes all out with 4 and starts a ko fight If White uses 5 to extend to 'a', Black answers at 'b' and it's still a ko.

Failure 2. Alive

It seems as if White should be able to attach at 1 and kill Black, but, after 4, Black is alive. Black 6 is a good answer to White 5. If instead Black blocks with 6 at 'a', White kills him by playing at six and making a big eye.

Also, if White use 5 to hane at 6, then Black will live with the diagonal play at 5 (albeit in seki).

Reference 1. An extra liberty

Here Black has one extra liberty at 'a'. Now, *even* if White plays first, the result is no longer certain death for Black.

White plays 1 to 3, then tries 5, but now only gets a ko. Additionally, you should verify for yourself that, if White begins with 1 at 3, then follows the procedure of answering Black 4 with the placement of 6, Black can play at 'b' and live.

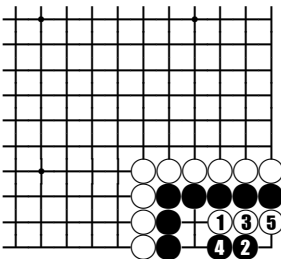
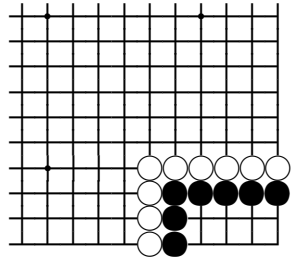
Reference 2. Ko

When Black has an extra liberty, the correct procedure for White is to turn at 1. Black has no choice but to block at 2 and answer White's cut at 3 by going all out with 4 to make a ko.

Pattern 5

Black is alive

There are no defects in Black's perimeter wall. He is affected somewhat by a shortage of liberties, but even if it's White's turn to play he cannot kill the black group. The best possible attack only produces a seki.

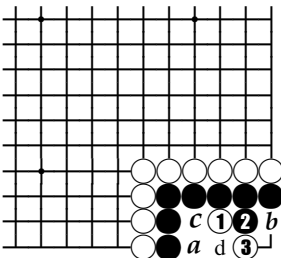


Variation 1

Variation 1. Seki

There seem to be a few vital points and White 1 is at one of them. Black must answer without fail by jumping to 2, then answer 3 by connecting underneath at 4. Up to 6 is a seki.

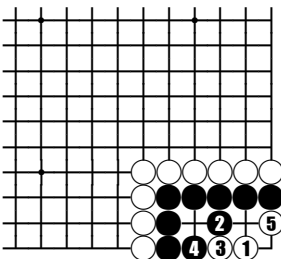
If Black plays 4 at 5 instead, White will block at 4 and get the dangerous ten thousand-year ko.



Failure

Failure. Defensive error

Defending against White 1 by blocking at 2 is also dangerous. White will hane at 3, and, sure enough, has now created some ko aji. If it is now White's move, he can play 'a' and 'b' to start a ko; even if Black plays atari at 'c' before White 'a', White connects at 'd' and the play what 'd' remains.

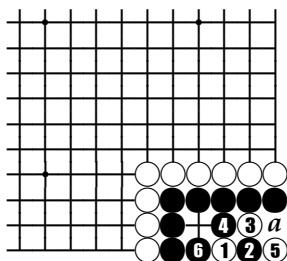


Variation 2

Variation 2. The 2-1 point

White 1 here is also one of the vital points. Black has to respond at 2, and with 3 and 5 White makes an eye for himself in the corner, making this also a seki. Note, however, that in this case, it's a gote seki for White.

If Black bumps into White at 'a' instead of 2, White will hane at 2, giving the same result as in the previous diagram.

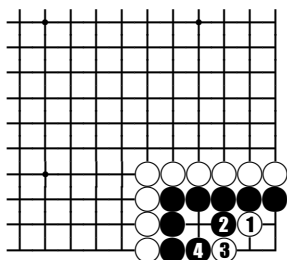


Variation 3

Variation 3. Missing the vital point

The placement at White 1 misses the vital point. Black 2 and 4 are the best answer; up to 6, this is not a seki; Black is alive.

If instead of 2, Black answers White 1 at 4, White 2, Black 6, and White 'a' end up being in a seki.



Variation 4

Variation 4. Similarly

This White 1 also misses the vital point Black blocks at 2 and White has missed his chance.

The upshot of all this is that White can't hope for anything more than a seki, and getting that seki in sente by following Variation 1 is the correct procedure.

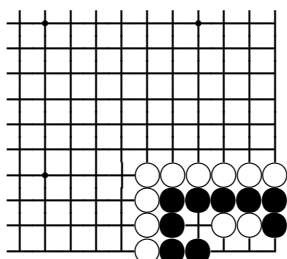


Diagram 1

Seki versus Ko

Suppose we set up a problem as in *Diagram 1* and ask, "If it's White's turn to play, what is the result?"

The correct answer, of course, is that White blocks at 1, Black throws in at 2 and White captures at 3, making a ko.

As an alternative, White could also play 1 at 2, with Black answering at 1 to create a seki, but, as I've mentioned before, *seki* means that Black is alive, so it's a failure for White.

In a game, if a ko fight is not in White's best interests because of a lack of ko threats, then making a sente seki might be reasonable, but that is a separate issue from the evaluation of life and death problems.

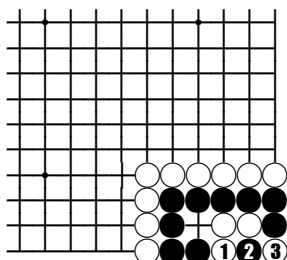
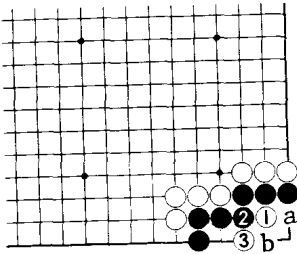
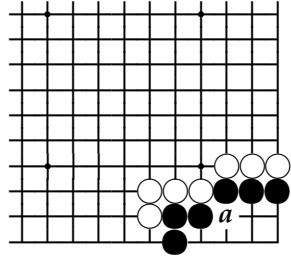


Diagram 2

Pattern 6

White to play, Black dies

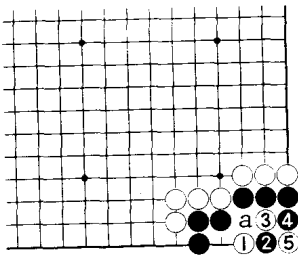
This 'eight-space' pattern has a dent in it, and actually consists of only seven spaces. Black's defect is, of course, the cutting point at 'a'. The question is how to punish him for it, but don't settle for a ko!



Solution

Solution. Attachment

There is no need to think up something complicated, as White's attachment at 1 will suffice. Black must connect at 2, so White can follow up with the hane at 3. If Black continues with 'a', White plays 'b'; this is not seki: it's a four-space big eye.



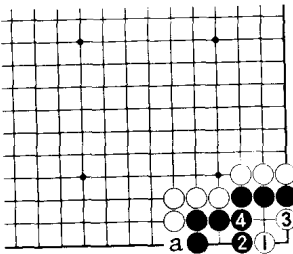
Failure 1

Failure 1. Ko

White's placement at 1 also seems like a good move; however Black can resist by attaching at 2 and continue by answering 3 at 4 to force a ko.

If Black answers with 2 at 3, then White 2, Black 5 also produce a ko.

A black response of 2 at 'a' will be answered by White 3, which reverts to the solution diagram, so Black is dead.



Failure 2

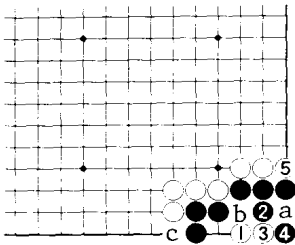
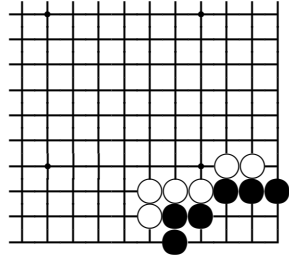
Failure 2. Seki

At first glance, the placement at White 1 also has the appearance of a tesuji, but with the diagonal attachment at 2, Black makes an eye for himself and there is nothing White can do. White 3 is sente, but after this, the best he can do is fill in the black liberty at 'a' and make a gote seki.

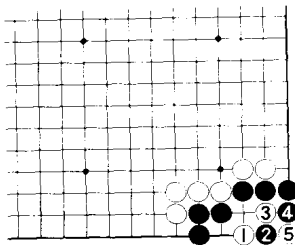
Pattern 7

White to play and make a ko

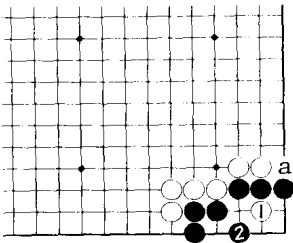
Comparing this to the previous pattern, Black has an extra liberty on the right side. What can White do now, if it's his turn? If you refer to the previous diagram, the answer will probably come to you.



Solution



Variation



Failure

Solution. Begin with the placement

This time you start with the white placement at 1. Turning at 2 is Black's best defense and then he answers White 3 by throwing in at 4. In this position, after White 5, Black could switch elsewhere if he chose to, but after that, White 'a', Black 'b', White 'c' would produce a true ko. So, as it stands, it's a one-step approach-move ko.

Variation. A true ko

As you are already well aware, answering White 1 by attaching at Black 2 also gives a ko. This time, however, it's immediately a real ko, so for Black the previous diagram is better; consequently, Black 2 is something of a defensive mistake.

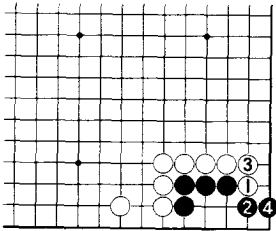
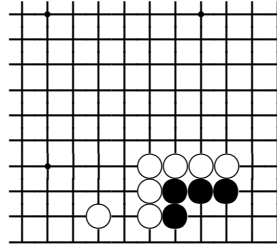
Failure. Alive

What about attaching at White 1? This time, however, the defensive move at Black 2 is playable. The extra liberty at 'a' has proved to be an important difference between this pattern and the previous one.

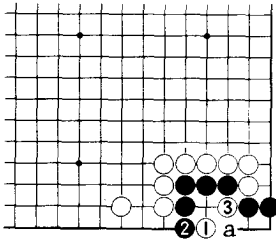
Pattern 8

White to play, Black dies

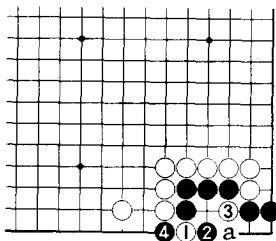
The basic pattern of the eight-space shape has been completed, but the foot of it is still open. Moreover, the fact that there is a shortage of liberties problem means that if White plays first, Black will not be able to survive.



Solution 1



Solution 2



Failure

Solution 2. Hane and connection

With the hane at 1 and connection at 3, White kills the black group. Black descends to 4 and it seems as if he has enough eye-space to live, but there is a serious defect in his shape. White's next play is a standard technique of life and death.

Solution 2 Placement

White's placement at 1 is a strong play. When Black blocks at 2, White cuts at 3, and, because of his shortage of liberties, Black cannot atari the white stones.

If Black makes the diagonal attachment at 'a instead of 2, White connects underneath at 2 and it's all over

Failure. Response to the hane

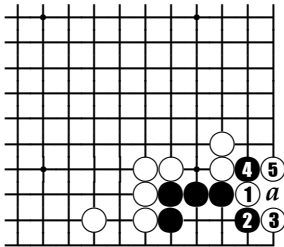
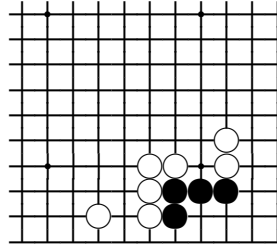
If White doesn't know about the placement at 1, Black will be able to survive. For example, in answer to a white hane at 1, Black blocks at 2, then, even if White cuts at 3, Black simply captures at 4, leaving White with no way to continue.

Even if White begins with the placement at 'a', Black plays 2 and is alive.

Pattern 9

White to play and get a ko

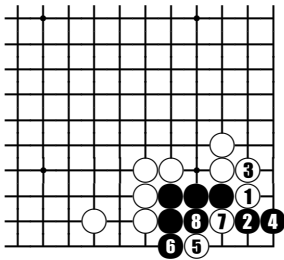
Black has an extra liberty in the middle of his formation, so things won't go as they did in the last pattern. White will reinforce his position surrounding the black group and use a practical fighting technique to start a ko.



Solution 1

Solution. Two-step hane

The two-step hane of White 1 and 3 is the answer. In response to Black 4, White goes all out with the atari at 5. When Black captures at 'a', a ko fight begins.

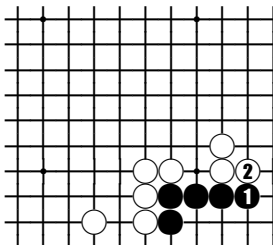


Failure

Failure. The extra liberty

If White plays the hane and connection of 1 and 3, Black descends to 4. This time, however, when White continues with 5 and 7, Black's extra liberty allows him to play atari at 8 and live.

Additionally if White begins by descending to 3, Black blocks at 1 and the shape reverts to Pattern 2 of this section.



Reference

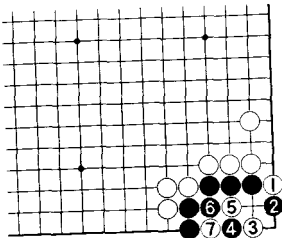
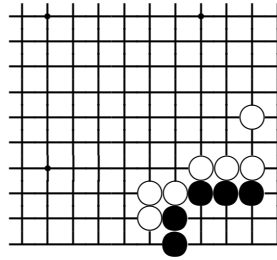
Reference. Black's hane

In an actual game, if Black has an opportunity playing the hane at 1 makes his position safe. If White answers at 2, this exchange alone has eliminated White's means of starting a ko.

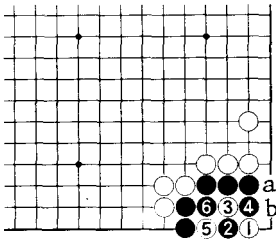
Pattern 10

White to play and get a ko

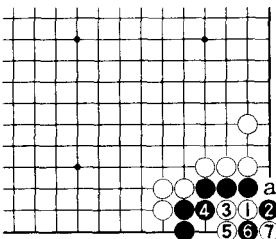
This shape would have to be called, the corner 'comb' shape. White has various means of attacking it, and they all lead to ko. This shape comes up often in actual play, so you should learn it well.



Solution 1



Failure



Solution 2

Solution 1. Hane and placement

The first solution is the hane of White 1, followed, when Black blocks at 2, by the placement of White 3. Black has no choice but to resist by attaching at 4; in answer to White 5, he sets up ko with 6.

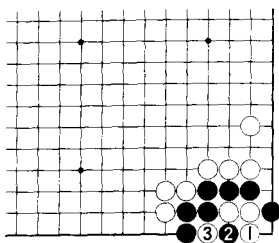
If Black plays 4 at 5, White crawls to 4 and Black is dead.

Failure. Omission

Simply making the placement at White 1 omits a step in the process. When Black plays 2, followed by White 3, the cut at 4 is a good move. When White captures at 5, Black plays atari at 6. The result here won't be a big eye. For that to happen, White first needs to make the exchange of White 'a', Black 'b'.

Solution 2. Belly attachment

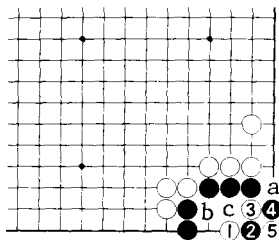
The second solution is the belly attachment at White 1. After Black plays a hane at 2, White crawls to 3, then answers Black 4 by descending at 5. In order to avoid a big eye, Black is forced to throw in at 6, making a ko. If White wins the ko fight, he will capture at 'a', giving him good aji.



Solution 3

Solution 3. Another possibility

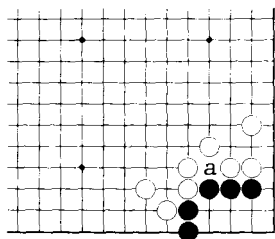
Instead of 5 in the previous diagram, White could also turn at 1 here. Since Black will die if White continues at 2, he must throw in at 2 himself, with a ko as the result. Of course, in the event that White wins the ko fight, the aji of the previous diagram is better for him.



Solution 4

Solution 4. The third possibility

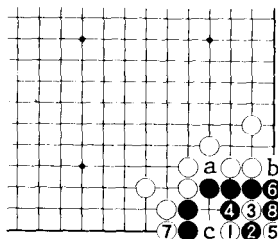
The third method is the placement at White 1. Black must attach at 2, then White 3, Black 4 yield a ko. After White 5, if Black connects at 'a', White either cuts at 'b' or connects at 'c', aiming at a five-space big eye. In either case, it continues to be a ko.



Reference 1

Reference 1. Two routes

Black has an extra liberty at 'a'. Despite this, if it's his turn to play White can still force a ko, but of the three ways to make a ko shown so far, only two still work. Which one do you think no longer works?



Reference 2

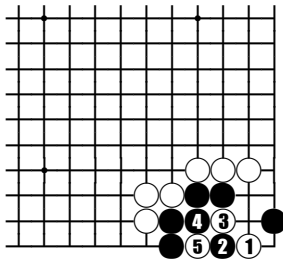
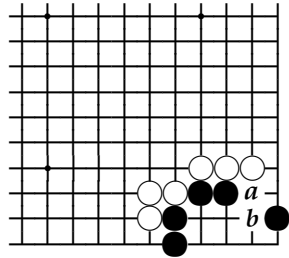
Reference 2. Alive

The white placement at 1 no longer produces a ko. This is because, after Black 2 and White 3, Black can now play at 4, then descend to 6. In response to White 7, Black plays atari at 8 and is alive. When the liberty at 'a' is filled in, White responds to 6 at 'b', then Black 'c' and White 7 produce a ko.

Pattern 11

White to play and make a ko

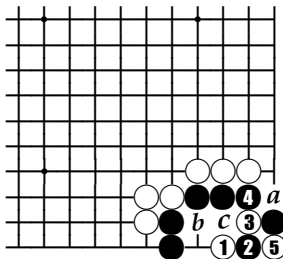
In this shape, Black has abandoned the commonsense play at 'a' and has played at the 2-1 point in hopes of living. However, he is not alive unconditionally. By the way should White push at 'a', Black will block at 'b' and live.



Solution 1

Solution 1. The 2-2 point

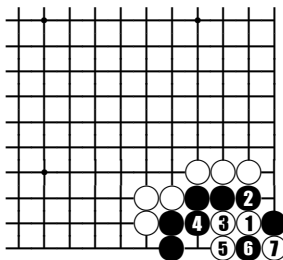
White attacks with 1, taking the other 2-1 point Black has no choice but to attach with 2, and in response to White 3, defend at 4, inviting a ko. Should Black play 2 at 3, White crawls at 2 and kills him.



Solution 2

Solution 2. Placement

The placement at White 1 is also one of the vital points of this shape. Black's strongest resistance is the diagonal attachment at 2. In response to White 3, Black cuts White off at 4, making a ko. After White captures at 5, if Black connects at 'a', White responds at either 'b' or 'c' and it's still a ko.



Solution 3

Solution 3. Attachment

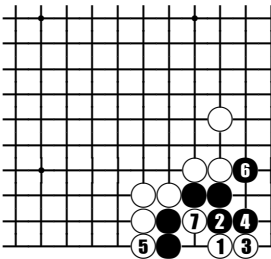
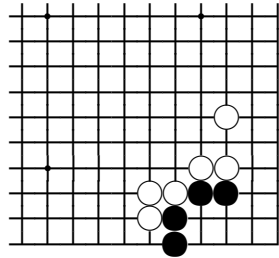
White can also make the attachment at 1 here. After Black 2, he crawls to 3 and answers 4 by turning at 5. Black is forced to throw in at 6, so up to White 7 it's a ko.

Of the three ways of producing a ko discussed here, the damage to White, should he lose the ko fight, is smallest in Solution 1.

Pattern 12

White to play, Black dies

This is an incomplete eight-space eye shape. The question is whether White can simply attack in an ordinary manner from the outside. If ko is to be considered a failure, you probably ought to give the first move some careful consideration.

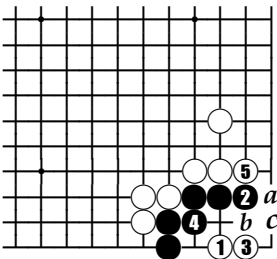


Solution 1

Solution 1. Placement

The placement at White 1 is the vital point of this shape. After Black 2, crawling once with 3 is good, and in response to Black 4, White should block at 5. Now, when Black plays 6, capturing at 7 prevents Black from making two eyes.

If Black uses 6 to connect at 7, White descends to 6.

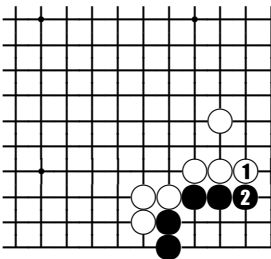


Solution 2

Solution 2. Lined up

If Black answers White by descending to 2, calmly lining up his stones at 3 is a cool response. When Black connects at 4, White blocks at 5. Now 'a' and 'b' are miai, so Black is dead.

If White cuts with 3 at 4, Black 3, White 'b', and Black 'c' produce a ko.



Failure

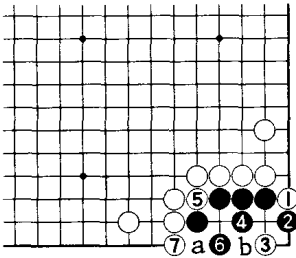
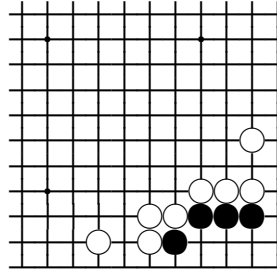
Failure. Ko

White's descent to 1 is an ordinary attack in this position, but as you've already seen in Pattern 10, when Black blocks at 2, the result of the continuation is a ko.

Pattern 13

White to play, Black dies

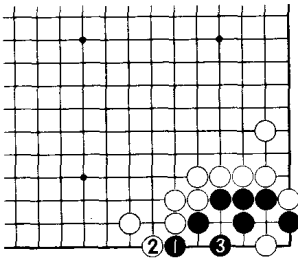
It appears that Black has enough room to live, but this shape has a weak point. You need to be very careful about your order of moves. Black can put up some unexpectedly tenacious resistance about halfway through, so be careful.



Solution 1

Solution 2. Combination

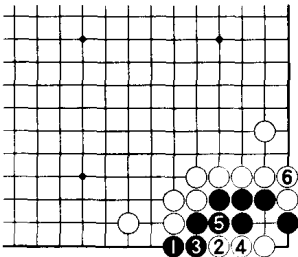
The hane at 1 and the placement at 3 are the correct combination. After Black 4, White 5 is Black's Achilles heel. When Black tries to make an eye at 6, White descends at 7, restricting Black to just one eye.



Failure 1

Failure 1. Approach-move ko

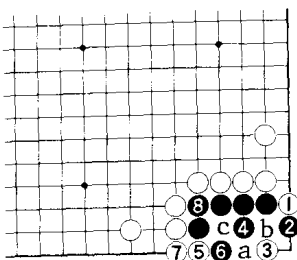
Instead of Black 6 in the previous diagram, Black 1 in this diagram is an important variation. If White follows along carelessly and blocks at 2, Black makes an eye with 3. This is still an approach-move ko for Black, but if you consider that group was originally unconditionally dead, an approach-move ko can be called a failure for White.



Solution 2

Solution 2. Three-space big eye

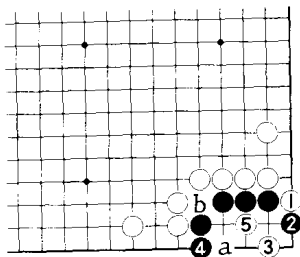
After Black 1, White's placement at 2 is the way to deal with Black's resistance. When Black connects at 3, White also connects at 4, then after Black 5, White has the connection at 6. You can verify for yourself that this is not a seki but a three-space big eye.



Failure 2

Failure 2. Ko

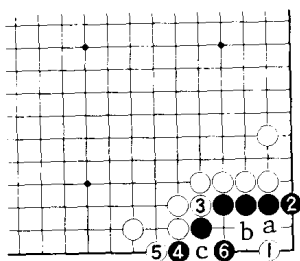
After White 1 to Black 4, playing the hane and connection of White 5 and 7 is careless. Black 8 is at the vital point and a ko remains. White 'a', Black 'b' and White 'c' produce a direct ko.



Solution 3

Solution 3. Diagonal attachment

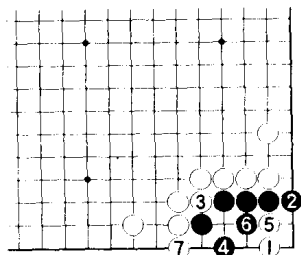
After White 1 and 3, Black descends to 4, trying to expand his eye space. In this position, the diagonal attachment of White 5 is the vital point. After this, if Black 'a', White occupies Black's weak point at 'b', creating a big eye. If Black plays 4 at 'b', White 'a' is good enough.



Failure 3

Failure 3. Simply making the placement

If White simply begins with the placement at 1, Black will descend to 2, creating a somewhat troublesome shape. White 3 is still the vital point, but Black 4 and 6 provide considerable resistance. After this, White 'a', Black 'b' and White 'c' make this a one-step ko for Black, but any ko is a failure for White.



Failure 4

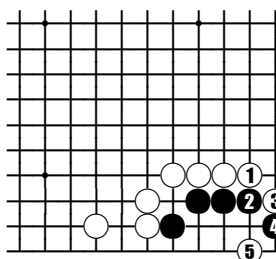
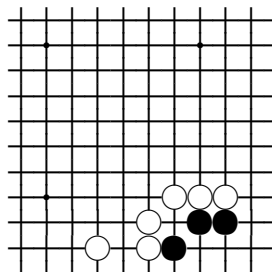
Failure 4. Black's lack of imagination

After White 1 to 3, trying to make an eye at 4 is bad, as White 5 and 7 kill the black group. This turns White's direct placement into a successful move. Of course, this is only because Black's technique was inadequate to the task.

Pattern 14

White to play, Black dies

Take a look at this shape in which the previous diagram has been backed up a little. Does the solution jump right out at you? In addition to the solution, there are also a number of interesting variations, so it is perfect research material.

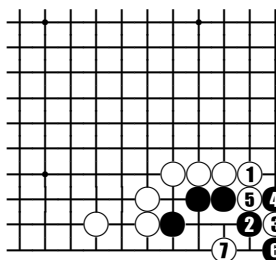


Solution 1

Solution 1. Descent

White's descent to 1 is calm. If Black blocks at 2, it reverts to the last pattern and White 3 and 5 kill Black unconditionally.

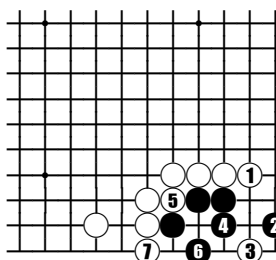
However, for Black 2 there are other devices he might try, so we need to investigate them as well.



Solution 2

Solution 2. Stepping Down

If in answer to White 1, Black steps down to 2, how should White proceed? At this point, White must attach at 3. After Black 4 to 6, White's placement at 7 is the vital point for making this into a big eye.

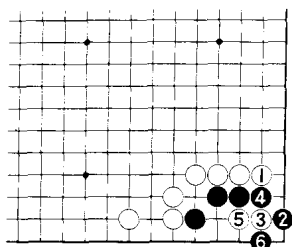


Solution 3

Solution 3. Confusing

After White 1, dodging to 2 is a confusing answer White has to be very careful to avoid being deceived.

The placement at 3 is the vital point After Black 4, White 5 is also important Up to 7, White has efficiently killed Black.

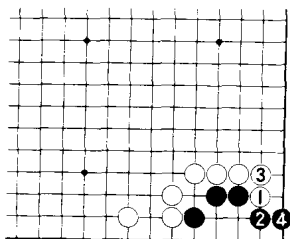


Failure 1

Failure 1. A trap

If White attaches at 3, is taken in by Black's attempt to confuse him. Black answers White 5 with a hane at 6 and has managed to force a ko.

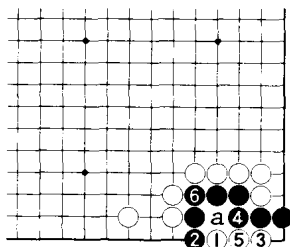
Besides the attachment, playing White 3 at 4 is vulgar and also fails. The resulting position is the same as that in the next diagram.



Failure 2

Failure 2. Hane and connection

Going back to the beginning, what about the hane and connection of White 1 and 3? Naturally, Black will descend to 4. In this position, it looks as if White can do something, but can he really?

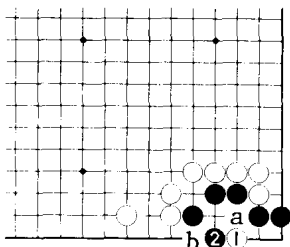


Failure 3

Failure 3. Sell

Lets try the placement at White 1. After Black 2, White must play the attachment at 3, but after Black 4 and White 5, Black can finally connect at 6 and live in seki.

Even if White uses 3 to try the cut at 4, Black is not short of liberties, so he can atari at 'a'.



Failure 4

Failure 4. Black is alive

If White makes the placement at 1 on the right side, Black plays the diagonal attachment at 2. The fact that Black is alive can be easily verified.

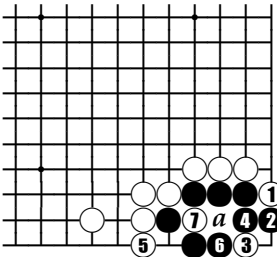
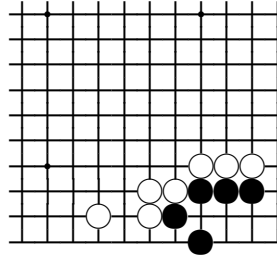
If Black carelessly connects with 2 at 'a', then White 'b' and Black 2 result in a ko.

Pattern 15

White to play, Black dies

White's attack is the same as in several of the previous patterns.

However, I'd also like to examine the effect of changes in White's encircling formation on this position.

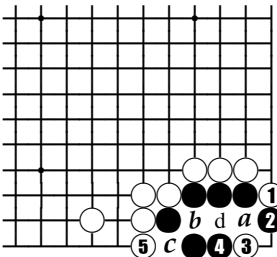


Solution 1

Solution 1. Hane and placement

Here, too, the hane followed by a placement is the correct technique. After Black 4, White's descent at 5 is also a play that you've learned previously. When Black plays 6, White has the throw-in at 7, which ruins Black's eye on the left

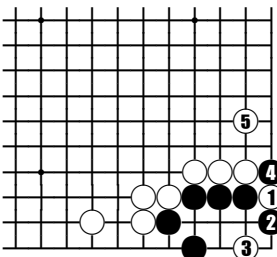
Even if Black plays 4 at 'a, White's descent at 5 is good enough.



Solution 2

Solution 2. Same thing

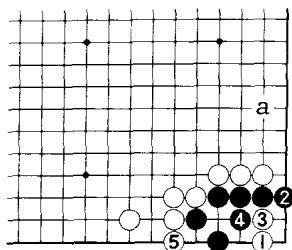
Even if Black tries the thrust at 4, he has no answer to White's descent at 5. If he continues with Black 'a', White answers at 'b'; if instead he perseveres with 'c', White can atari at 'd'.



Solution 3

Solution 3. Unrelated

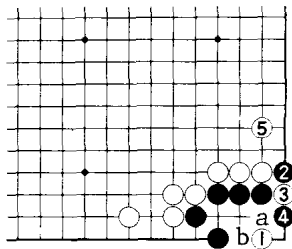
After White 1 to 3, what if Black first tries to extricate himself by capturing at 4? White simply defends at 5 and Black's capture at 4 is not going to be of any assistance in living. You should understand this aspect of this shape thoroughly.



Solution 4

Solution 4. A Simple Placement

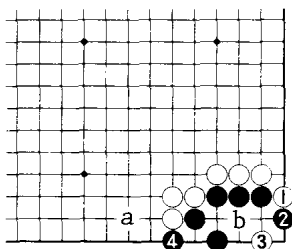
The fact is, the simple placement at 1 also kills the group. If Black answers at 2, White plays 3 and 5, in order. However, don't forget that when Black has a stone at 'a' this variation gives him the opportunity to connect to the outside.



Solution 5

Solution 5. Playing hane first

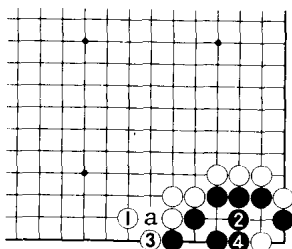
When White begins with 1, take heed of Black's hane at 2. Promptly throwing in at White 3 is important; after Black 4, defending at 5 kills the group. If instead of 3, White simply defends at 5, after Black 'a' and White 3, Black will be able to live by playing 'b'.



Reference 1

Reference 1. Hane on the left

Next, let's look at the position when White doesn't have a stone at 'a'. After White 1 and 3, Black's hane at 4 becomes something of a problem. Needless to say, if White has a stone in the vicinity of 'a', he can ignore a black hane at 4 and play the diagonal attachment at 'b' to kill the group.



Reference 2

Reference 2. Ko

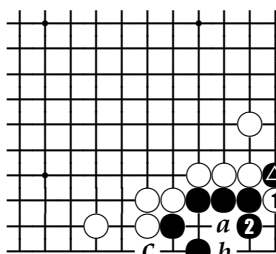
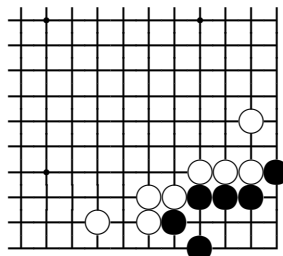
When White cannot help but defend at 1, Black makes an eye at 2 and is no longer unconditionally dead. Black answers 3 by connecting along the bottom at 4 and gets a direct ko.

If White blocks with 1 at 3, Black's cut at 'a' will of course become a problem.

Pattern 16

Black is alive

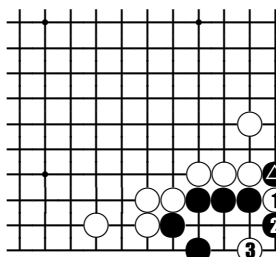
In this shape Black has played a hane ahead of time. This single hane becomes of great assistance to Black Even if White gets to make the first play here, there is nothing he can do. However, if Black is not careful about how he defends, sudden death is a possibility.



Variation 1

Variation 1. Composure

One of the strong plays that White can make is the throw-in at 1. In response, turning at Black 2 is a steady answer. Next, even if White plays at 'a', trying to make big eye, Black plays 'b'. If White descends to 'c' instead, Black lives by playing 'b'. Either way, the marked black stone makes its presence felt.

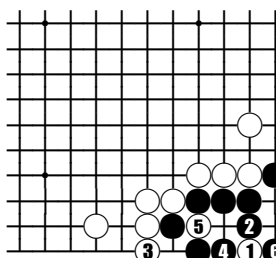


Failure

Failure. Unthinking

In response to White 1, capturing at Black 2 is thoughtless. White makes the placement at 3 and now we have the dead shape which previously appeared on page 102.

Capturing at 2 doesn't give the marked black stone a chance to do any work.



Variation 2

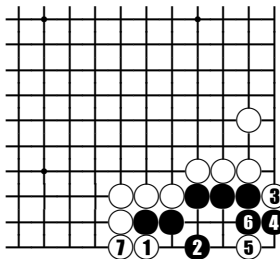
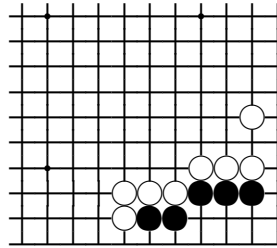
Variation 2. Frightening

The placement at 1 is also a strong move. Once again, Black 2 is the vital point; when White descends to 3, Black blocks at 4. When White throws in at 5, for an instant Black might think he is dead, but simply capturing at 6 secures life: if White 'a', Black 'b' leaves Black alive.

Pattern 17

White to play, Black dies

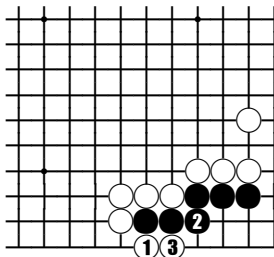
A somewhat similar pattern follows. Black's base seems to have gotten a bit broader, but with White's first move it'll revert to a pattern that we've already seen.



Solution 1

Solution 1. Hane

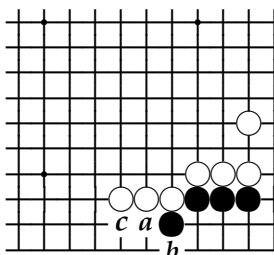
The ordinary hane of White 1 is good enough. Black has no choice but to make the open connection at 2. After this, White plays the standard combination of 3 and 5. If Black plays 6 at 'a', White connects at 7, and Black will be reduced to a false eye on the left.



Solution 2

Solution 2. The tight connection

As another possibility, Black could respond to White's hane at 1 with the tight connection at 2. However, when White crawls in to 3, this becomes a dead shape.



Reference

Reference. Ko or death

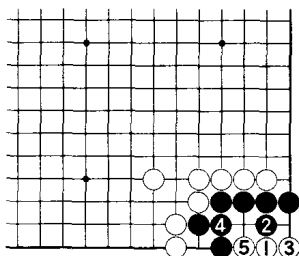
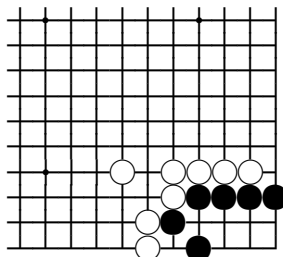
In this position, even if it's White's turn, Black is not necessarily dead. If White blocks at 'a', Black descends to 'b', and, as we showed earlier, this shape becomes a ko. Therefore, if Black, thinking that he can play elsewhere here and get a ko, thoughtlessly exchanges Black 'a' for White 'c', he has made his own group vulnerable.

Pattern 18

White to play, Black dies

You'll probably be able to find the vital point quickly, but be careful not to make a mistake on the several moves which follow

There is also a possibility of making a mistake if you think too much.

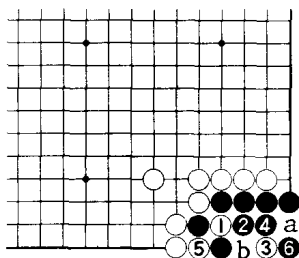


Solution

Solution. The 1-1 point

Simply making the placement at White 1 is correct. After Black 2, White 1, occupying the 1-1 point, is a calm answer. If Black connects at 4, White pushes at 5 and creates bent four in the corner.

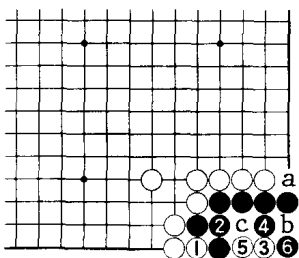
Also, if Black uses 4 to block at 5, White can throw in at 4 and make it into a false eye.



Failure 1

Failure 1. An overplay

Throwing in at 1, then making the placement at 3 looks like a tesuji, but when Black fills in at 4, things go wrong. After White 5, Black throws in at 6, then answers White 'a' by squeezing at 'b', so Black survives.



Failure 2

Failure 2. The atari is vulgar

If White simply plays atari at 1, Black connects at 2, and since Black has an open liberty at 'a', there is no way to kill him outright White 3, Black 4, etc. produce a ko.

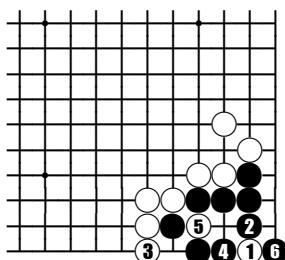
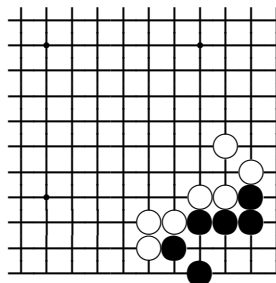
Even if White had a stone at 'a', Black answers White 1 at 3 and with White 'b', Black 'c', and again it's a ko. Either way, White 1 is a mistake.

Pattern 19

Black is Alive

This pattern often appears in actual play. You need to learn why, as it stands now, the black group is alive.

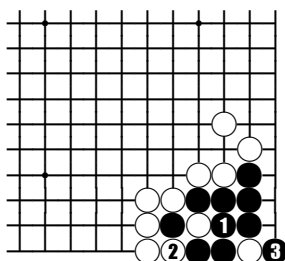
Since White does have at least one troublesome way of attacking, be careful.



Variation 1

Variation 1. Placement

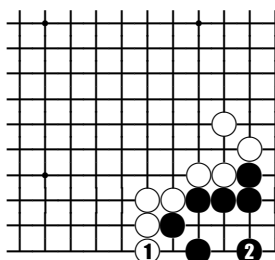
The so called 'troublesome' play is the placement at White 1. In response, Black should answer at 2. When White descends at 3, Black blocks at 4. Even if White now throws in at 5, Black can simply capture at 6. White's capture at 'a' will be gote.



Variation 2

Variation 2. White captures in sente.

This shows an alternative for Black 6 in the previous diagram. When White throws in at 5 there, Black captures at 1; if White plays 2, Black makes life with 3, but in this case White has made some endgame moves in sente. It's a small detail, but in actual play the previous diagram is the correct way to defend.



Variation 3

Variation 3. Perfection

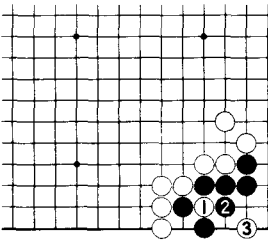
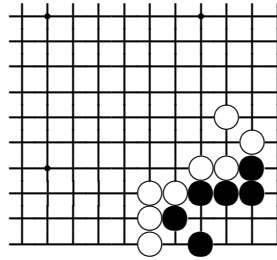
If White begins by playing the descent at 1, Black 2 makes perfect shape. For White, following Variation 1 and aiming at the endgame move is more profitable.

Additionally, what if Black plays elsewhere instead of 2? This will be our next topic.

Pattern 20

White to play, Black dies

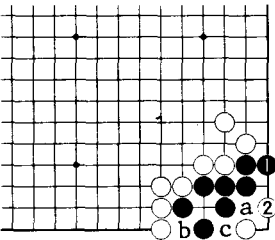
This is the result after Black ignores a white descent on the left side and plays elsewhere. At this point White can use a technique common to life and death situations to kill the black group. The key is his first move.



Solution 1

Solution 2. Throw-in

White plays the combination of the throw-in at 1 and the placement at 3. White 1 reduces Black's eye space, then White 3, making a false eye out of the left side, is devastating. To see how Black resists, consider the next diagram.

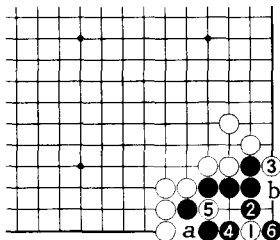


Solution 2

Solution 2. Bent four in the corner

Black's descent to 1 is met by the white diagonal play at 2. After the continuation of Black 'a', White b', we have a bent four in the corner.

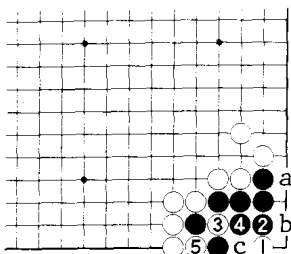
Also, even if Black tries to fight on by playing 'b' in this position White plays atari at 'c' and it's all over



Failure 1

Failure 1. Falling short

The placement at White 1 may be at the vital point, but there hasn't been enough preparation. After Black 2, White has no choice but to narrow Black's eye space by playing a hane at 3, but Black blocks at 4 and White falls just short. After Black 6, White 'a' is met by Black 'b'.

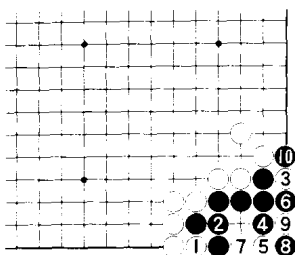


Failure 2

Failure 2. An error in the corner

White 1 is the wrong order, but after White 3 capturing the stone with 4 is disastrous. In this event, White pushes in at 5 and Black is dead. In the continuation, Black 'a' is met by White 'b'.

Black 4 must be at 'c'.

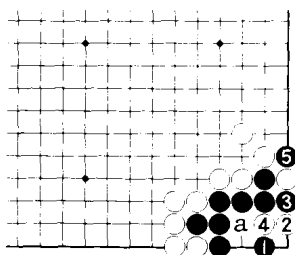


Failure 3

Failure 3. Black doesn't die

Simply playing atari at White 1 has to be called vulgar Black connects at 2 and now Black won't die without exacting a price.

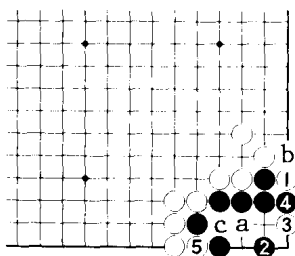
Answering White's hane at 3 by turning at 4 is good; with the sequence from 5 to 9, White does threaten to kill the black group, but after Black 10 it's merely an approach-move ko.



Failure 4

Failure 4. Just for the record

Just in passing, in this position, defending with Black 1 at the 2r1 point is dangerous because of to Black's shortage of liberties. After White 2 and 4, Black cannot block at 'a'. However, if capturing at Black 5 is sente for Black, he makes it possible for himself to play at 'a' and live.



Failure 5

Failure 5. No way

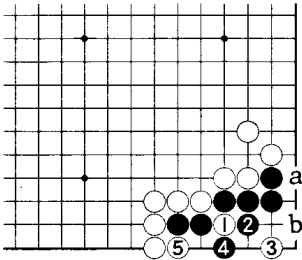
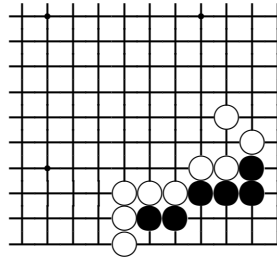
Returning to the original pattern, White's hane at 1 is certainly hopeless. Black 2 is the vital point White can play 3 and 5, but at worst Black defends at 'a' and gets a ko. If the capture at 'b' is sente for Black, he can answer White 5 at 'c' and live.

Pattern 21

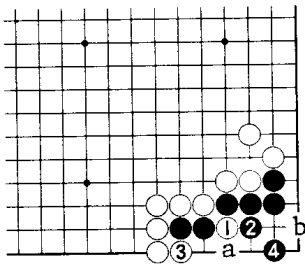
White to play, Black dies

This is similar to the previous diagram, but because White has descended to the edge on the left side, Black has bad aji.

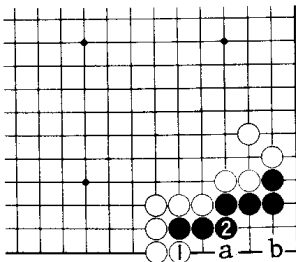
White's method was seen previously in a similar example.



Solution



Failure 1



Failure 2

Solution. Sacrifice cut

The combination of the cut at White 1 and placement at 3 is the procedure referred to. When Black captures at 4, White pushes at 5. At this point you can probably see that this is the same type of shape as in the previous pattern. After White 5, answering a black descent to 'a' with the diagonal play at 'b' is good enough.

Failure 1. Vital point first

After White 1 and Black 2, White 3 is wrong. Should Black capture at 'a' with 4, this reverts to the solution diagram, but Black 4 turns out to be the vital point and Black is allowed to live. Even if White plays 'b', Black simply captures at 'a', and it's all over.

Failure 2. Undistinguished

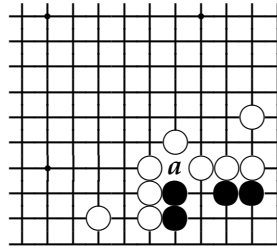
Pushing in at White 1 isn't very smart. Black connects at 2 and gets a living shape. For Black making this tight connection is important, since if he plays the open connection at 'a', he allows White to throw in at 2.

Also, if White plays 1 at b', Black connects solidly at 2 and White has no continuation.

Pattern 22

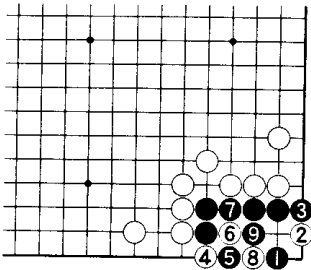
Black to play and live

The problem for Black is whether to secure additional eye space or give priority to making eye shape. The fact that Black has an liberty at 'a' is the key to this position. You need to read it out thoroughly.

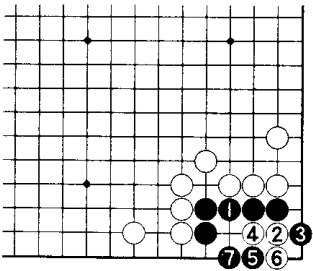


Solution 1. The jump

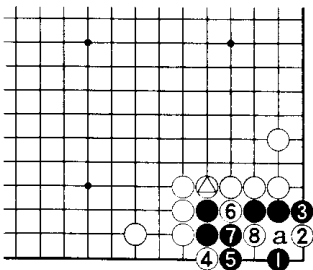
Black 1 is the point that makes building eye shape the easiest. White has no choice but to make the placement at 2. After Black 3, White should probably have at 4, but responding to this by blocking at Black 5 is a strong move. White 6 is met by Black 7, forcing White to capture one stone, and Black 9 prepares to recapture at 5.



Solution 1



Solution 2



Reference

Solution 2. Losing points

The connection at 1 comes easily to mind. After White 2 to 4, Black 5 is a good move which has already been shown to make the black group live (page 82). Even so, since White can get a sente seki, evaluated from the point of view of actual play, this is inferior to Diagram 1.

Reference. Shortage of liberties

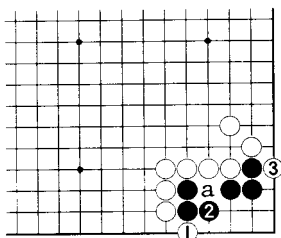
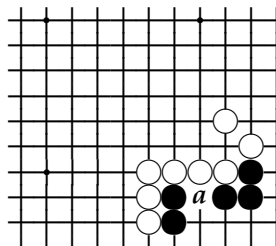
For reference, in this shape Black's liberty has been filled in by the marked white stone. This time if Black plays the jump to 1, after the moves from White 2 to Black 5, White can play 6 and 8, so Black dies.

Consequently, Black must connect with 1 at 6; when White attaches at 'a', the result is a ten thousand year ko.

Pattern 23

White to play, Black dies

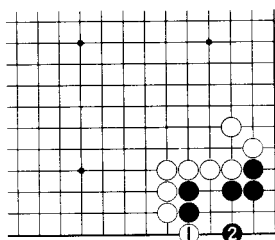
It is obvious that the gap in Black's position at 'a' is a major weakness. For White, the question is how to take advantage of it; simpler is probably better



Solution 1

Solution 1. Double hane

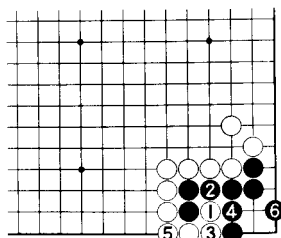
The hane at White 1 is sufficient. If Black pulls back at 2, White plays another hane at 3. Because of the liberty at 'a' you might not recognize it, but this is also a version of the dead L-shape.



Solution 2

Solution 2. Black dodges

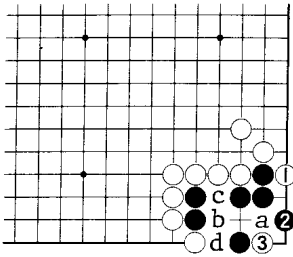
Regarding the position after White's hane, Black can think of several ways to defend himself. Of course, no matter what he plays, he can't avoid dying, but White needs to know all of the variations. For example, how should White respond to Black 2?



Failure 1

Failure 1. Vulgar

Playing atari at 1 is crass. Black connects at 2 and now has managed to get a living shape. White has to connect at 3, so with 4 and 6 Black just manages to live.

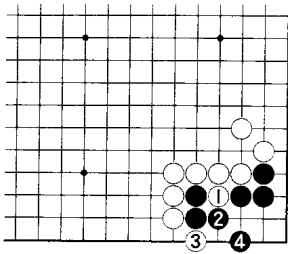


Solution 3

Solution 3. Hane kills

In this position as well, the hane at White 1 is intelligent. If Black steps down to 2, you can readily see that the attachment at 3 is the vital point. Next, if Black 'a', White 'b' serves the purpose.

Also, if instead of 2 Black connects at 'c', White 'd', Black 'b', White 'a' is good enough.

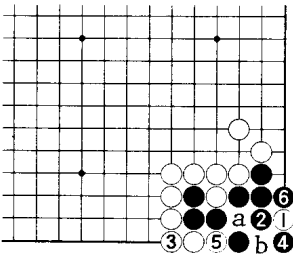


Failure 2

Failure 2. Black is alive

Pushing at White 1 is also vulgar. After Black 2, the hane is correct in this position, but when Black plays the open connection at 4, there is no longer any way to kill him.

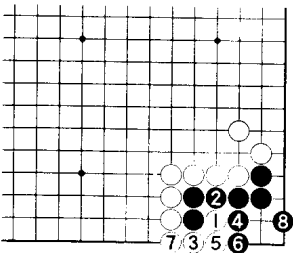
Additionally, continuing from this position, we have the following variation.



Failure 3

Failure 3. It's powerful, but...

White's placement at 1 is a way to continue to harass the black group. If Black 2, connecting along the bottom at 3 is powerful, but after Black 4 and White 5, Black captures at 6 and is alive. If Black connects at 'a' instead of 6, White captures at 'b', and since Black cannot atari at 6, it's a ko.



Failure 4

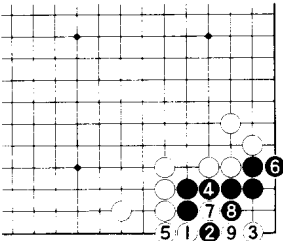
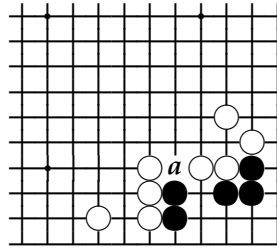
Failure 4. Simple

The belly attachment at White 1 is also a vulgar play. When Black connects at 2, even if White links underneath at 3, Black 4 and 6 are sente; with the diagonal move at 8, Black is alive.

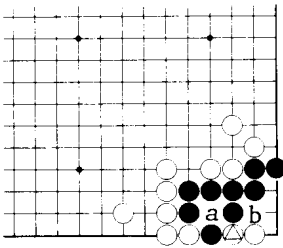
Pattern 24

White to play and make a ko

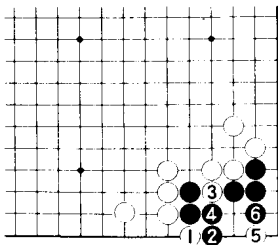
Unlike the previous pattern, Black has a liberty at 'a'. Because of this, he will be hard for White to deal with. The final result is a ko, but as there are some extremely complicated variations, pay close attention to this position.



Solution 1



Reference



Failure 1

Solution 1. The strongest way for both sides

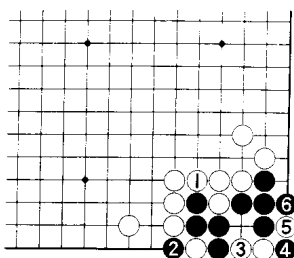
Playing a hane at 1 followed by the placement at 3 is the technique for attacking this black group. When Black connects at 4, White 5 is a steady response; when Black plays 6, White 7 and the push in at 9 make a ko. In the middle of this, if Black plays 2 at 7, White plays 6.

Reference. The nature of this ko

White has just pushed in with the marked stone. Even if Black plays elsewhere once it's still a ko, albeit an approach-move ko for White. However, when White captures at 'a', it now becomes a one-step approach-move ko that favors White. Therefore, rather than being a normal approach move ko, this is a direct ko.

Failure 1. A hard customer

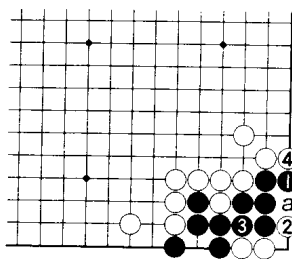
After White 1 and Black 2, pushing at 3 and then making the placement at 5 is also a strong way to play, but the variations can be very difficult. Black's best move is to make contact at 6. The question is what will happen next.



Failure 2

Failure 2. Squeeze play

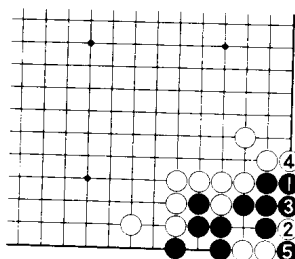
White continues next by filling in a liberty with 1. Black captures a stone, inviting White 3. At this point, Black's throw-in at 4 is a good move. Black answers White 5 by blocking at 6, yielding a shape which is not a ko. You can probably see that White has been squashed.



Failure 3

Failure 3. Black dies

Black 4 in the previous diagram is a good move. If instead Black descends to 1, as in this diagram, after White's hane at 2, Black is in trouble. Even if he plays atari at 3, White blocks at 4 and Black can't play 'a' because of his shortage of liberties. This position is bent four in the corner.

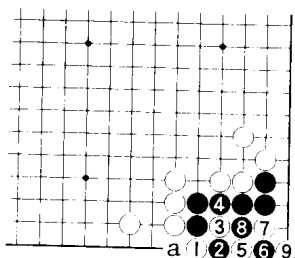


Failure 4

Failure 4. Ko

This is a variation of the previous diagram. After Black 1 and White 2, Black has no choice but to fill in his own liberty at 3 and fight a ko. White 4 and Black 5 produce a direct ko.

Looking at this shape, you can probably see that Black's original descent to 1 was a bad play because of its effect on the liberties of his group.



Solution 2

Solution 2. A separate answer

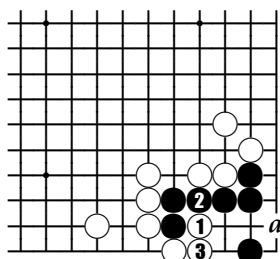
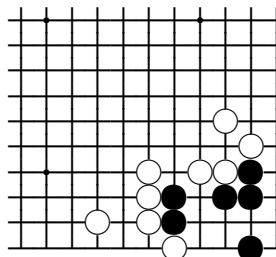
After White 1 and Black 2, the vulgar plays of 3 and 5 also succeed. Black resists with 6 and 8, captures the ko with 10 at 2.

In this position, if Black should win the ko, he captures at 'a' and takes profit, so Solution 1 is generally considered to be best.

Pattern 25

White to play, Black dies

Using the previous pattern as a starting point, in response to White's hane Black defended by jumping down with the marked stone. Since the variations are interesting, they are being dealt with separately. Be careful not to make a mistake and fall into the trap.

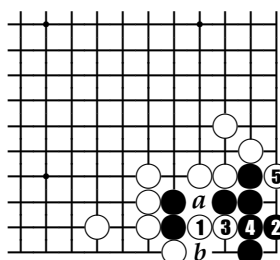


Solution 1

Solution 1. Turn upwards

In this position, starting with the hane at 1 is important. After Black 2, White connects at 3 and Black doesn't have enough room to make two eyes.

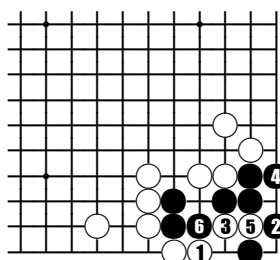
If White plays 1 at 'a', Black will block at 3 and live.



Solution 2

Solution 2. Black can't make two eyes

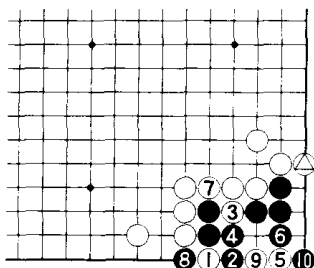
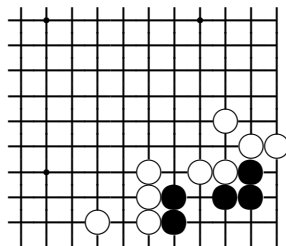
If Black plays 2, it looks as if he's going to live, but pushing once at 3, then playing a hane at 5 is good enough. Next, if Black connects at 'a', White does likewise at 'b'. It's tricky, but Black can't capture the White stones by creating a shortage of liberties.



Pattern 26

White to play, Black dies

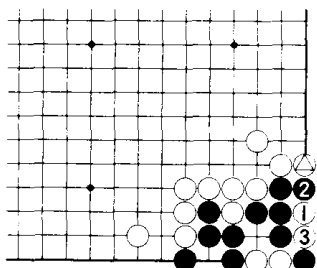
This time a white descent at the marked stone has been added. This is a variation of Pattern 24, but at the end White has an exquisite play that puts an end to all of Black's resistance.



Solution 1

Solution 1. Effective

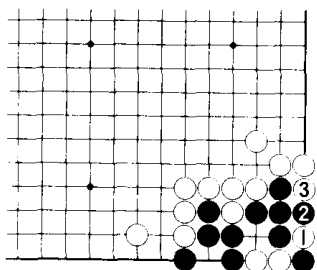
This time White 1, 3, and 5 become effective. After the continuation to White 9, Black 10 has already been introduced as a good move for Black. This time, however, because of the presence of the marked white stone, White has an even nicer play available to him. That move is shown next...



Solution 2

Solution 2. Attachment

White plays the attachment at 1. After Black 2, White captures at 3. Black captures a stone by playing at the 1-1 point and then White recaptures with 5 at 3. At that point, the marked white stone filling in Black's liberties makes its presence felt, as Black is unable to squeeze because of a shortage of liberties. The position becomes a bent four in the corner.



Failure

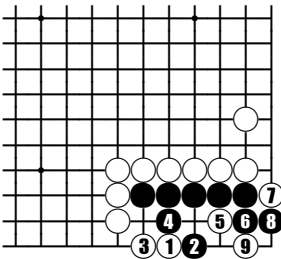
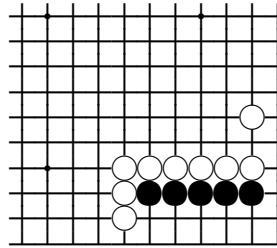
Failure. Ko

If White makes the ordinary move of 1, Black blocks at 2. White can then fill in Black's liberty with 3, and it becomes a ko, but this, of course, isn't as good as the solution.

Pattern 27

White to play, Black dies

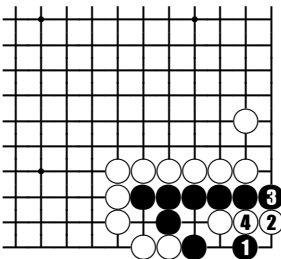
In this shape, Black has five stones lined up on the third line. His base seems to be fairly wide, but the white descent on the left side is powerful, so if White plays first, Black dies. The attack, however, requires a good bit of technique.



Solution 1

Solution 1. Small-knight move

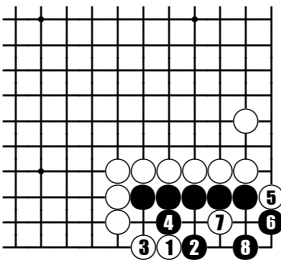
Not jumping too far, just sliding in with the small-knight move to White 1, is steady. Attaching with Black 2, trying to make his base as wide as possible, is Black's only choice. Pulling back with 3 shows composure. After Black 4, White 5 occupies the vital point for making eye shape. Black 6 is met by White 7 and 9. Black is dead.



Solution 2

Solution 2. Placement

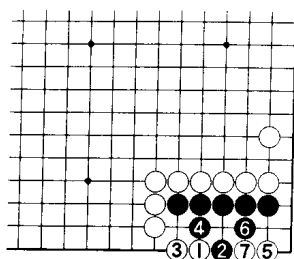
Instead of 6 in the previous diagram, Black jumps to 1. White counters with the placement at 2. After Black 3, White connects at 4. This isn't a seki; it's a three-space big eye.



Failure 1

Failure 1. Order of moves

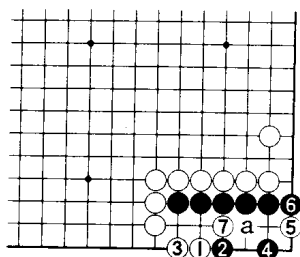
Even if White plays 1 and 3 correctly after this it is still easy to make a mistake. For example, White might first hane at 5; when Black answers at 6, attaching at 7 looks as if it will kill White, but appearances are deceptive. Black 8 is a good move and makes Black unconditionally alive.



Failure 2

Failure 2. Ko

After White 1 to Black 4, you might see the vital point at White 5 first. However, in this case, Black makes *eye* shape with 6; even if White attacks at 7, the best he can get is a ko.

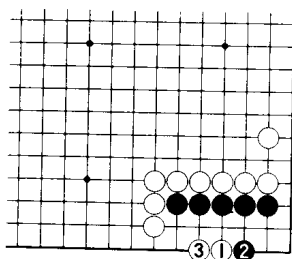


Solution 3

Solution 3. Desperate

After White 1 and 3, Black 4 is a desperate measure. Of course, White 5 is the vital point: after Black 6, playing atari at 7 kills Black unconditionally.

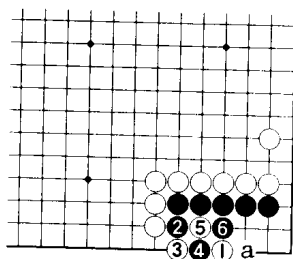
If White gets flustered and plays 5 at 7, he lets Black play 'a' and live.



Failure 3

Failure 3. The big jump

Wanting to enter just a little bit deeper is human nature and the slide to White 1 is probably the first thing that comes to mind. In response, the attachment at 2 is too straightforward. After White pulls back with 3, there isn't enough space for Black to make life. Black 2 is equally as bad a move as White 1.



Failure 4

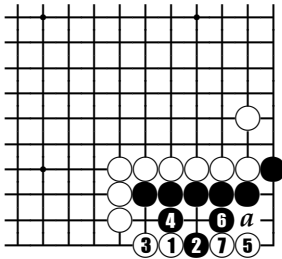
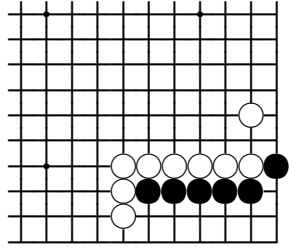
Failure 4. Ko

In response to White 1, Black has to put up a fight with 2 and 4. After White 5, Black plays atari at 6; after White 'a', a ko fight develops. Needless to say ko is a failure for White.

Pattern 28

White to play and make a ko

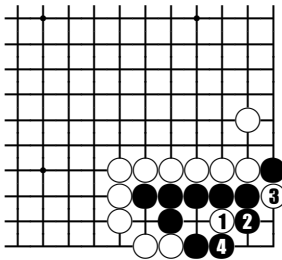
The difference between this position and the last one is the presence of Black's hane on the edge of the board. The problem, you could say, is how Black should make use of it. There are two alternatives for White's attack.



Solution 1

Solution 1. The small-knight jump

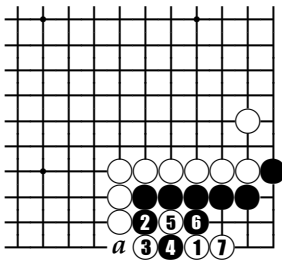
Once again, the small-knight jump to White 1 is correct. After Black 2 to 4, the placement at Black 5 is White's best play this time. After Black makes eye shape with 6, White pushes in at 7 and makes a ko. You can probably assume Black 'a' and White 'b' starting a direct ko.



Failure

Failure. The effect of the black hane

The attachment at White 1 was the solution to the previous pattern, but this time it's a mistake. After Black 2 and White 3, Black 4 is a calm answer and now, ironically, White 1 doesn't wreck Black's eye shape. The power of this single hane is tremendous.



Solution 2

Solution 2. The large-knight jump

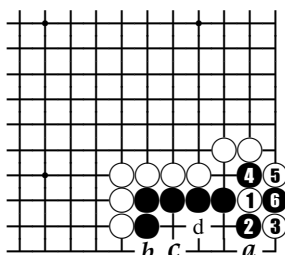
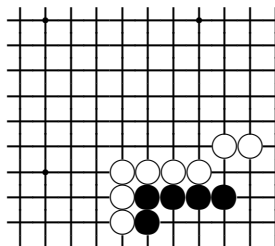
White can also make the large-knight jump to 1. Playing 2 to 6 is Black's best defense and White crawls at 7, again making a ko.

However, if Black wins this ko, he will capture at 'a', so compared to Solution 1, Black comes out slightly ahead.

Pattern 29

White to play and make a ko

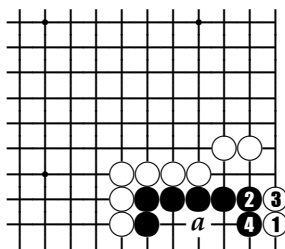
This time the position is open at the base from the other side. It appears that no matter how White plays, Black is alive. The small-knight move doesn't work the large-knight move doesn't work but White has a third option.



Solution

Solution. Attachment

White attaches at 1, answers Black 2 with a hane at 3, and in a response to Black 4, there is room to go all out by starting a ko with 5. If Black continues at 'a', White 'b', Black 'c', and White 'd' follow Black can use these moves as ko threats, but there can certainly be no doubt that this is a real ko.

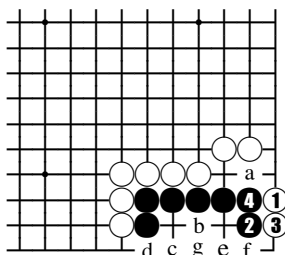


Failure 1

Failure 2. An important sequence

Sliding in with the large-knight move at White 1 leads nowhere. For Black, first playing 2, then turning to 4 is an important sequence. After this it's obvious that even if White next plays 'b', Black can play 'a' and live.

If Black plays 2 at 4, White plays at 2 and this reverts to the previous diagram.



Failure 2

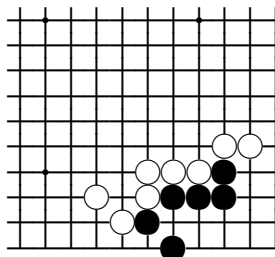
Failure 2. Small-knight move

Sliding in with the small-knight move at 1 is dubious. Black simply makes the diagonal move at 2 and, after White 3, the empty triangle of 4 makes this revert to the last diagram. Just for reference, after this, White 'a' is met by Black 'b', then White 'c', Black 'd', White 'e', Black 'f', and White 'g' lead to a seki and life for Black.

Pattern 30

Black is alive

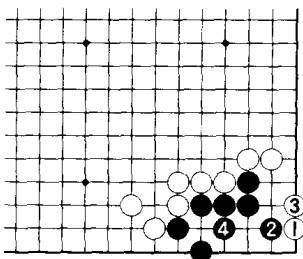
The base of Black's position is open, heaving some bad aji, but his hanging connection on the left side gives him good shape, so as it stands, he is alive. However, in actual play, discovering the correct way to live when White attacks is not easy.



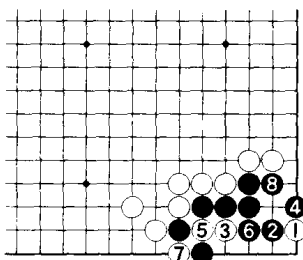
Variation 1. Straightforward

White's first attacking play is sliding in with the large-knight move at 1. However, pulling back at 3 next would just let Black live easily by making an eye at 4.

Even if it doesn't work, White must come up with something better than 3.



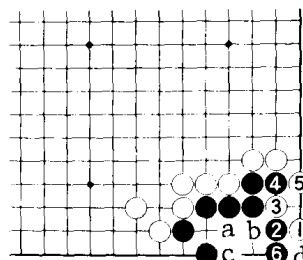
Variation 2



Variation 2. Forcing White to cut

After White 1 and Black 2, White has to make the placement at 3 to have any chance. If Black answers by connecting at 5, White pulls back at 4 and Black dies. Consequently, Black has no choice but to block at 4; after White 5, making an eye with Black 6 and 8 allows him to live.

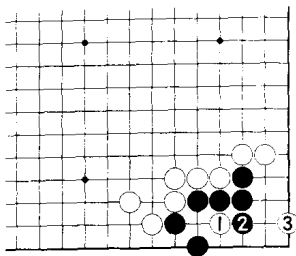
Variation 2



Variation 3. Rejecting ko

After White 1 and Black 2, White 3 is quite an aggressive answer. In answer to Black 4, White gets ready to play a ko with 5, but by descending to 6, Black can refuse to fight a ko. This is because, after the continuation of White 'a', Black 'b', and White 'c', Black can squeeze in at 'd'.

Variation 3

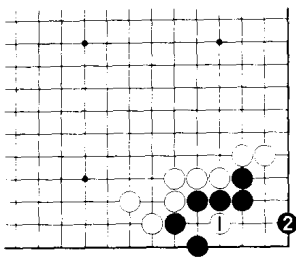


Failure 1

Failure 1 . A way to die

White's most effective play is probably White 1 here. It seems as if Black has no choice but to respond by blocking at 2, but in this position, White will make the large-knight move at 3, so Black dies.

That means that, Black has to find a better play for Black 2.

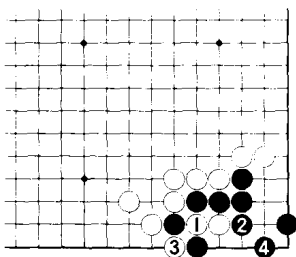


Variation 4

Variation 4. A splendid answer

After White 1, Black 2 is splendid. The fact is, this basic shape has shown up in life and death problems since long ago.

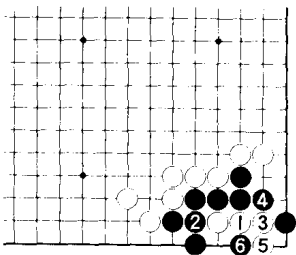
After this, we'll take a more detailed look at how Black goes about making life. Continuing in the next diagram...



Variation 5

Variation 5. The 2-1 paint

After the previous diagram, if White continues by cutting at 1, Black forces at 2 and then steps down to 4. It's a cramped area, but Black is able to play at both of the vital 2-1 points and just manages to live.



Variation 6

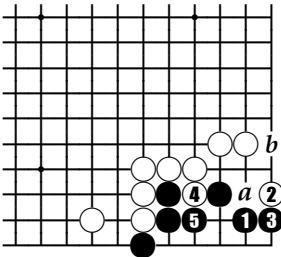
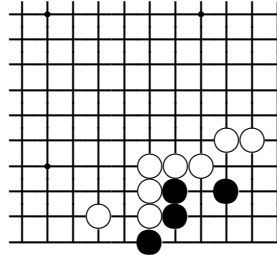
Variation 6. Safe

The variation in which White crawls at 1 is quite something. Black has to connect at 2, so White continues with 3 and 5, planning to make a five-space big eye. However, throwing in at Black 6 becomes a good move for avoiding the big eye. Black has managed to get through to safety.

Pattern 31

Black to play and live

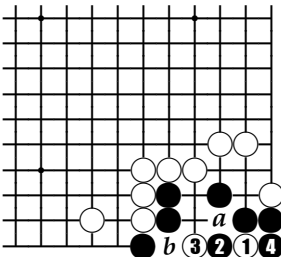
This is a shape which seems very likely to occur in actual play. The position looks quite thin, so unless you play at an extremely efficient vital point, living will be difficult. The hane on the left side is Black's lifeline.



Solution 1

Solution 1. Retreat

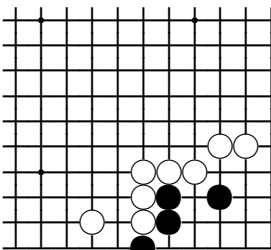
Black has to retreat at 1. In answer to White's slide to 2, Black blocks at 3. After White exchanges 4 for Black 5, White can't play at 'a', so Black just barely manages to live. Black must be careful, because if White later gets a chance to play at 'b', he can then play at 'a' and kill the black group.



Solution 2

Solution 2. Misleading

Can't White try for a big eye instead of 4 in the previous diagram? For example, something confusing like White 1 here. Unfortunately, Black blocks at 2 and answers White 3 by capturing a stone with 4 and is alive. Should Black carelessly connect at 'a', White plays 'b' and Black dies unexpectedly.



Failure

Failure. Missing the vital point

Black's descent to 1 missed the vital point. White throws in at 2 and Black no longer has a living shape. When Black pulls back at 3, White attaches at 4.

Additionally, connecting at 'a' instead of Black 1, is met by a white slide to 'b', so Black dies.

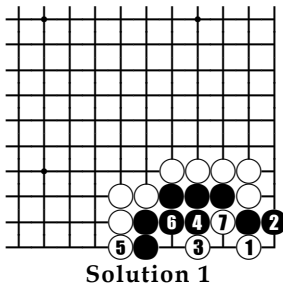
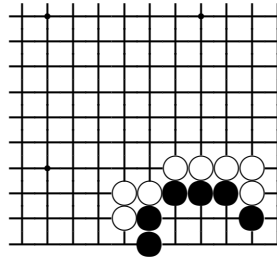
Part Four:

The Comb Patterns

Pattern 1

White to play and make a ko

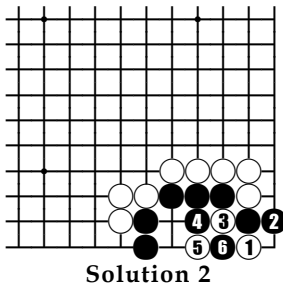
If you simply begin with a hane in the corner, Black will be able to live. You should verify for yourself, however, that due to the peculiarities of the corner, there are a number of ways to proceed.



Solution 1

Solution 1. Attaching

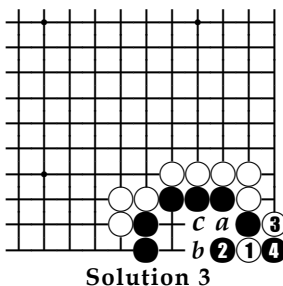
The vital point is the attachment at White 1. After Black 2, the jump to White 3 is also a vital point. Black has no choice but to run into White at 4, so with White 5 and the throw-in at 7, it becomes a ko. It is also possible to play 5 directly at 7, but in terms of an actual game, 5 is more profitable for White.



Solution 2

Solution 2. The cut

After White 1 and Black 2, White can also cut at 3, because the shortage of liberties of Black's three stones make it possible to follow Black 4 with White 5. When Black captures, it's a ko. This result is the same as playing a ko with 3 at 5, Black 4, White 3.

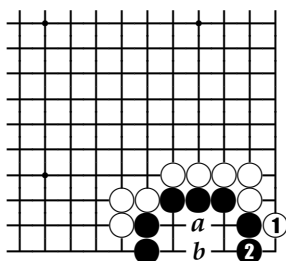


Solution 3

Solution 3. Playing ko directly

In response to the clamp at White 1, if Black blocks at 2, White plays an atari at 3. As it stands it's a ko fight in the corner.

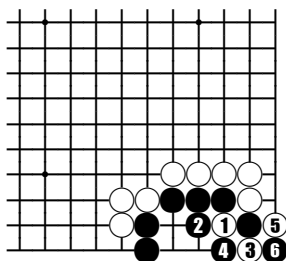
White 3 at 'b', followed by Black 'c', is also a ko. Instead of Black 2, connecting tightly at 'a' lets White connect underneath at 3 and Black dies.



Failure 1

Failure 1. The genuine article

The hane of White 1 is totally unimaginative. Black descends to 2, yielding a perfect example of the comb formation, so he's alive. After this, even if White tries to get a big eye, 'a' and 'b' become miai, so Black lives.



Failure 2

Failure 2. Two-step ko

What about beginning by cutting inside with White 1? At first this looks like a tesuji, but it's a little too tricky. After Black 2, White can try the maneuver of playing atari at 3, but the ko fight resulting from White 5, Black 6 is not a real ko, but a two-step ko instead. This is, of course, not as good as getting a direct ko.

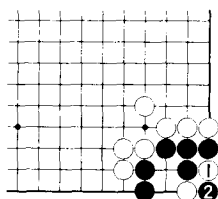


Diagram 1

Whose turn to start the ko

In the problem in *Diagram 1*, suppose it's White's turn to play. The solution is, of course, a ko.

Is it good enough for White to simply play 1 and let Black take the ko at 2? It certainly is a ko, but there is a problem with this. Strictly speaking, White must play the sequence of White 1 to 3 in *Diagram 2*. This is because, as you must have noticed, it now becomes White's turn to take the ko first.

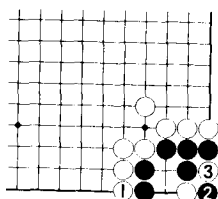


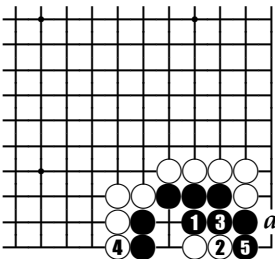
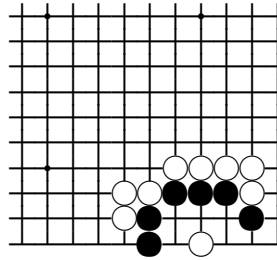
Diagram 2

Should *Diagram 1* be considered a correct solution? There is no rule for this in life and death problems, but even if we do decide to call it a solution, you should remember that it is not as good as the result in *Diagram 2*.

Pattern 2

Black to play and live

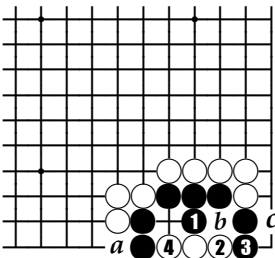
You can think about this as if White, in the previous pattern, made the placement inside as shown. This placement of White's doesn't work, but it's easy for Black to make a defensive mistake, so be careful.



Solution 1

Solution 1. The bump

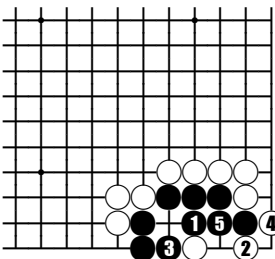
Playing the bump of Black 2 is good enough, but don't make a mistake after this. In response to White 2, connecting at 3 is important. Next, after Black 4, you must block from this side with 5, and now, since there is room at 'a', Black is alive. If Black plays 5 at 'b', White 'a' kills him.



Failure

Failure. Careless

After Black 1 and White 2, be very careful, since it's easy to block at 3. White extends to 4 and when Black connects at 'b', in order to defend against a white threat to capture by playing 'a', White plays a hane at 'c', killing the group. You need to understand clearly the difference between this and playing Black 3 at 'b'.



Solution 2

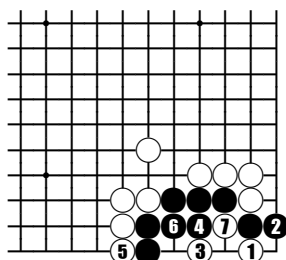
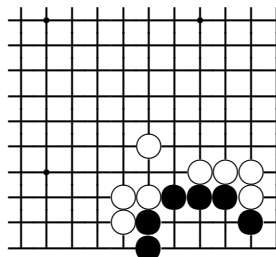
Solution 2. White is too late

In response to Black 1, even if White now attaches 2, it doesn't revert to a ko. Playing atari at Black 3 is good enough; if White then crosses under with 4, Black connects at 5 and is unconditionally alive. If Black descends with 3 at 4, it becomes a ko.

Pattern 3

White to play and make a ko

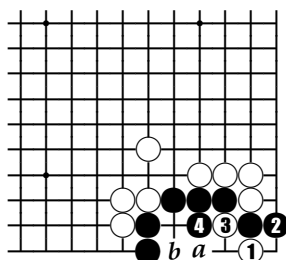
Black's three stones have an extra liberty on the outside. In the previous pattern there were several methods of obtaining a ko, but in this pattern they have been reduced to only one.



Solution 1

Solution 2. The same idea

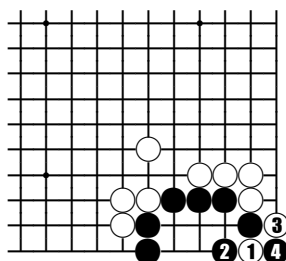
As you might have thought, for his first move, White is left with only the attachment at 1. When Black descends to 2, White jumps to 3. This, again, is his only option. The idea behind Black 4 to 8 appeared in Pattern 1. Note that, when White wins the ko, he connects at 8 and Black is dead.



Failure

Failure. The cut doesn't work

After White 1 and Black 2, cutting with 3 is unsuccessful. Once Black plays atari with 4, it's all over. Since he has an extra liberty even if White plays a hane at 'a', Black can simply block at 'b'.



Solution 2

Solution 2. Immediate ko

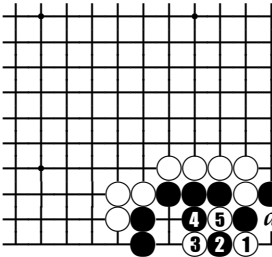
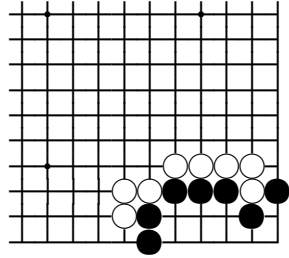
In response to White 1, Black also has the choice of blocking with 2. White 3 and Black 4 then produce a ko.

If White plays 1 at 3, Black descends to 1 and makes the comb shape. Also, White 1 at 'a' lets Black play 'b' and live. Refer to the previous patterns for both moves.

Pattern 4

White to play and make a ko

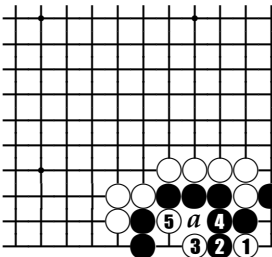
A hane has been added to the black position, so it looks as if Black is alive, but even with the hane, Black hasn't corrected all of his defects. There is still room for White to play first and force a ko.



Solution 1

Solution 1. Atari from the left side

Once again, White's only move is the attachment at 1. After Black 2 there is no room for White to play at 'a', but the atari at 3 is still threatening. Black is forced to defend with 4, so White captures with 5, starting a ko.

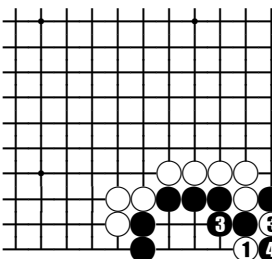


Variation

Variation. Shortage of Liberties

After White 1 and the atari at 3, should Black connect at 4, White has the cut at 5. because of his shortage of liberties, Black cannot play atari at 'a'.

Having said that, if Black has even a single liberty on the outside, not even a white attachment at 1 will work against the black group.



Solution 2

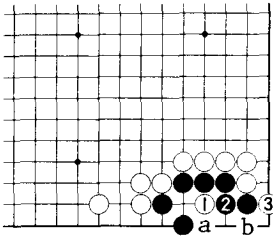
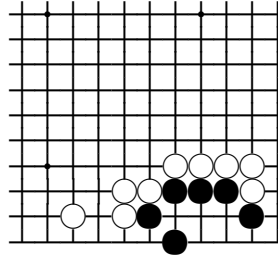
Solution 2. The throw-in

After White 1, it looks as if Black is safe if he connects at 2, but White throws in at 3 and gets a ko. Because the corner is such a confined area, it's surprisingly easy to misread this ko.

Pattern 5

White to play, Black dies

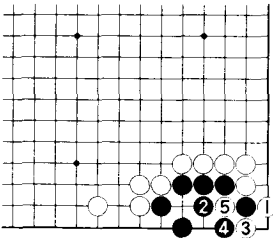
On the left side of his position, Black played the open connection instead of descending. Comparing the descent with the open connection, each has its pluses and minuses, but somehow the minuses of the open connection seem greater. If it's White's turn to play, Black dies unconditionally.



Solution

Solution. Crushing

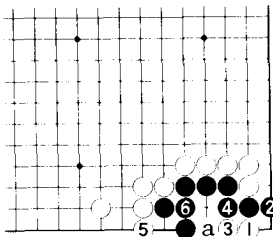
The answer is the attachment at White 1, decisively crushing Black's eye shape. After Black 2, White hanes at 3 and Black doesn't have enough space in which to live. The continuation is Black 'a', White 'b'. I'm sure it's readily apparent that this is not a ko.



Failure 1

Failure 1. Resisting

It would be easy in this position to slip up by almost automatically playing a hane at 1. Black can answer this, however, by resisting with 2; when White hanes again at 3, he blocks at 4 to get a ko.



Failure 2

Failure 2. Thinking too hard

In attaching at 1, White was thinking too hard. Black can resist with 2, and answer White 3 by connecting at 4. When White descends to 5, connecting solidly at 6 is a calm response; with White 'a', all White gets is a gote seki.

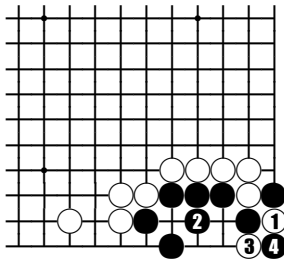
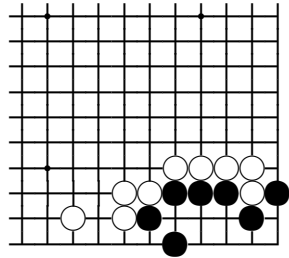
If Black plays 6 at 'a', White throws in at 6 and Black dies.

Pattern 6

White to play and make a ko

A hane has been added to Black's position in the previous diagram, and, as might be expected, it is no longer possible to kill the black group outright

The problem is White's first move, as there are a number of ways to go astray.



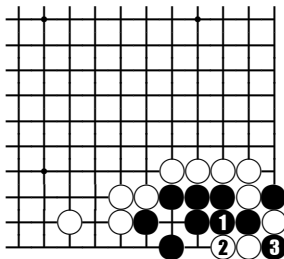
Solution 1

Solution 1. Throw-in

The throw-in of White 1 is the move which punishes Black for his ugly shape. In response, making an eye with 2 is Black's best defense, so with White 3 it becomes a ko.

Furthermore, in this fight, once White has recaptured the ko...

Reference. A local ko

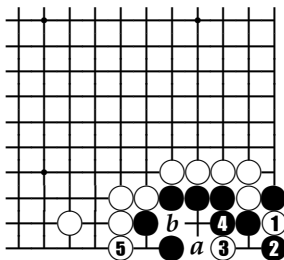


Reference

Black can connect at 1, but after White answers at 2, nothing has changed: it remains a ko fight. Still, Black can use 1 as an internal ko threat.

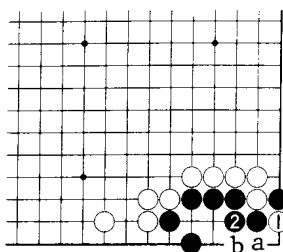
Variation 1. A common technique

What happens if, when White plays 1, Black captures at 2? In this case, the placement at White 3 becomes the vital point and Black dies unconditionally. White 5 is a common technique in this situation. The continuation of Black 'a', White 'b' is a dead shape that has come up many times before. Interestingly enough, even if Black answers 3 at 'a' instead of 4, White still plays 5.



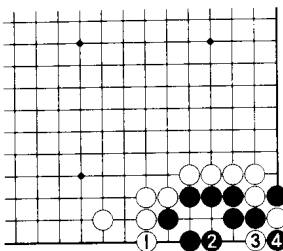
Variation 1

Solution 2. The follow-up?



In response to White 1, the connection at Black 2 is an unexpectedly effective defense. If it's not handled properly, White may end up letting Black live. How should White continue his attack? For instance, if White plays a hane at 'a', Black answers at b' and is alive.

Solution 2

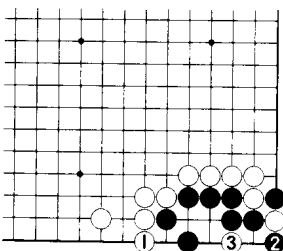


Solution 3

Solution 3. A good play

In this position as well, the descent to White 1 is a good play. When Black answers at 2, White plays a hane at 3 and once again it's a ko.

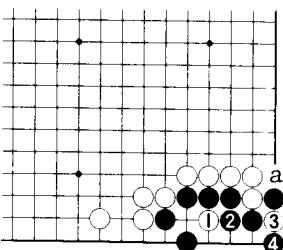
The ko resulting from White's hane at 3 is also probably very easy to miss in actual play.



Variation 2

Variation 2. Reversion

This is a variation of the last diagram. If Black captures at 2, White attaches at 3. You probably saw immediately that this reverts to Variation 1.



Failure

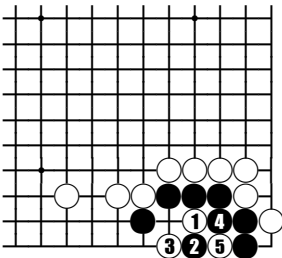
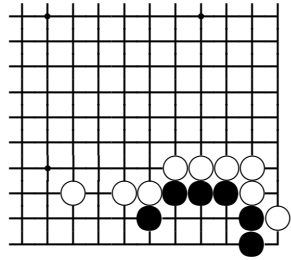
Failure. It looks dead, but...

Returning to the beginning, if White attaches out of the blue at 1, Black connects at 2, then answers White 3 by capturing at 4: he has been allowed to make two eyes. Even if White now blocks at 'a', Black connects at 3 and has two eyes.

Pattern 7

White to play and make a ko

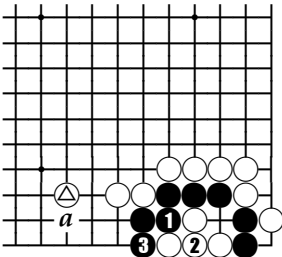
One of the teeth on the left side of the comb shape is missing, and Black's shape is imperfect. The question is how to take advantage of this. There are a number of possibilities for the first move, so latching onto the solution may prove difficult.



Solution 1

Solution 1. Attaching

Attaching at White 1 has a good feel to it and in fact is the best way to approach this position. Black has no choice but to resist by attaching underneath at 2 and then to answer White 3 by connecting at 4, making a ko. Needless to say, if White wins the ko fight, he will connect at 2, making a big eye.

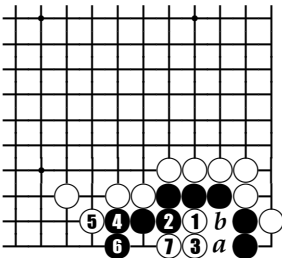


Reference

Reference. The surroundings

In the previous diagram, there is one thing you must be careful about

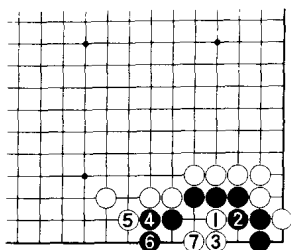
I'd like to warn you about the position resulting from Black's playing 1 and 3 to capture the four stones. The problem is the presence of the marked white stone. If it were not there, after White plays inside the black position, there is some reason to fear that Black could escape by playing at 'a'.



Variation 1

Variation 1. Death

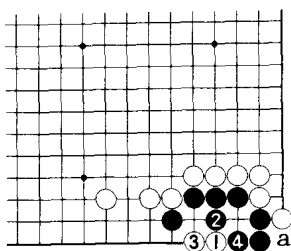
You also need to read out the variation in which, following White's attachment at 1, Black connects at 2. Of course, descending to 3 is forced. After Black 4 and 6, White turns at 7 and now, even if Black plays 'a', it's not a seki because of the cutting point at 'b'. Black is dead.



Variation 2

Variation 2. Simply

In answer to White 1, seeing that connecting at 2 leaves Black dead is even easier. Once again, White must descend to 3, and the moves up to White 7 produce a problem-free shape.

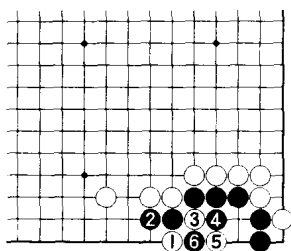


Failure 1

Failure 1. Placement

The placement at White 1 appears to be an even sharper attack. However, Black defends at 2 and answers White 3 at 4, leaving White without any way to proceed.

White 1 looks like the vital point but gets White nowhere. The reason for this is that the peculiarities of the corner prevent White from playing 'a'.

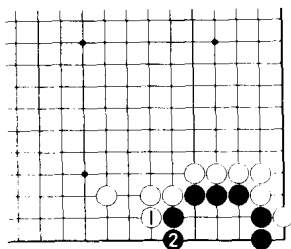


Solution 2

Solution 2. Another way

Actually in this position, there is one more correct solution, the attachment at White 1. After Black 2, White cuts at 3 and answers Black 4 with a hane at 5, producing a ko.

It's a splendid tesuji, but based on who gets to start the ko, Solution 1 is more favorable for White.



Failure 2

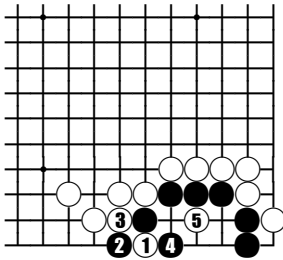
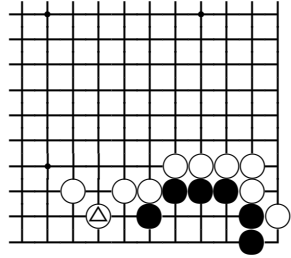
Failure 2. Unimaginative

It need hardly be said that blocking with White 1 is unimaginative. Black descends at 2 and is allowed to easily complete the comb shape.

Pattern 8

White to play, Black dies

Black's shape is the same as before, but the marked white stone which has been added on the perimeter is menacing. By attacking Black's defect, you'll have no trouble robbing him of an eye.

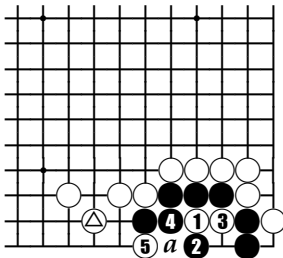


Solution 1

Solution 1. Attaching Underneath

The attachment at White 1 is the vital point. If the moves follow, then the five-space big eye emerges.

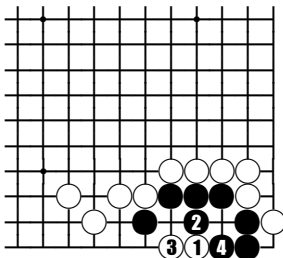
If Black plays 2 at 4, White pulls back at 2 and there is just no way for Black to live.



Solution 2

Solution 2. Belly attachment

White can even play the attachment at 1 and produce a dead shape. When Black attaches at 2, White 3 is the play which aims at killing Black outright. After Black 4, the attachment at White 5 works. You can see how effective the marked white stone is. Playing White 3 at 'a', letting Black play at 3 and get a ko, is a mistake.



Failure

Failure. Placement

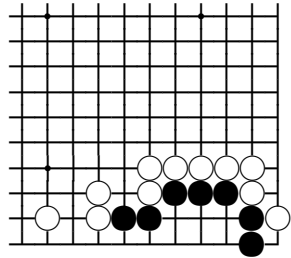
White 1, which at first glance has the aura of a vital point, is powerless in this position as well. Black responds with 2 and 4 and the two white stones won't be able to connect to the outside.

Even if White switches 3 to 4, Black simply blocks at 3 and it's all over.

Pattern 9

White to play and make a ko

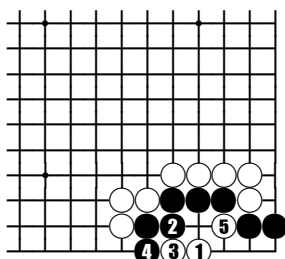
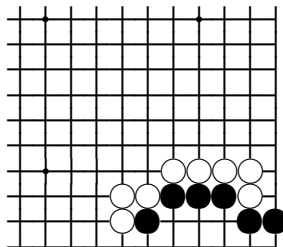
In this shape Black has extended towards the left side and expanded his territory, but this still doesn't give him a perfect shape. White attacks in exactly the same manner as before.



Pattern 10

White to play, Black dies

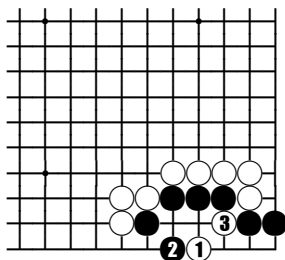
There is a defect on the left side of Black's shape. How should White punish him for this? Keep your eye on the shortage of liberties of the three stones forming the roof of Black's position.



Solution 1

Solution 1. The center of three stones.

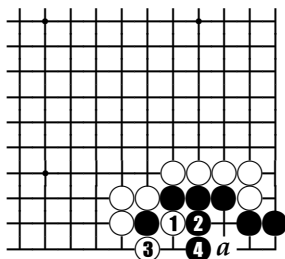
As it says in the proverb, 'the center of three stones is the vital point; so the placement at White 1 is a good move. After Black 2, crawling at White 3 is intended to lead Black into a shortage of liberties. After Black 4, White cuts at 5 and Black can't atari on the white stones on either side. This is a beautiful sequence.



Solution 2

Solution 2. The open connection

In answer to White 1, if Black makes the open connection at 2, White cuts decisively at 3. Once again, because of a shortage of liberties, there is nothing Black can do.

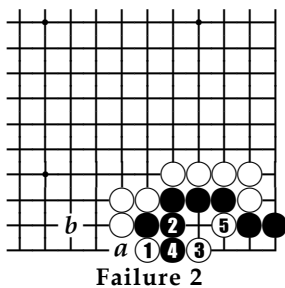


Failure 1

Failure 1. A vulgar move

Cutting at 1 is vulgar. After Black 2 and White 3, Black descends to 4 and is alive.

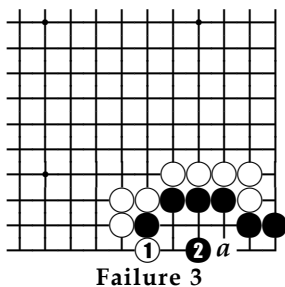
If Black hurriedly tries to make eye shape by playing 4 at 'a', then White throws in at 4 and gets a ko.



Failure 2. Atari on the bottom

Playing atari on the edge at White 1 is in the category of good moves. If Black connects at 2, White makes the placement at 3 and answers 4 by cutting at 5, so Black is dead. If Black continues by capturing at 'a', White 'b' is good enough.

However, Black's connection at 2 in this diagram is a mistake.

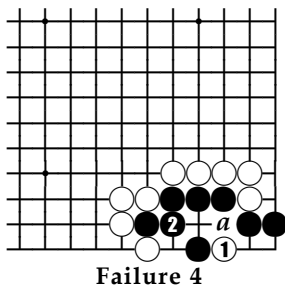


Failure 3. Jump

Answering White 1 by jumping to 2 is a good move. As you can see, 'the center of three stones' is the vital point

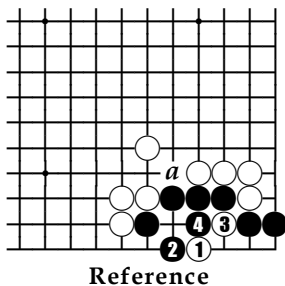
If Black makes the open connection at 'a' instead of 2, White jumps to 2 and Black is dead.

Let's investigate the position resulting from Black's jump to 2 a little further.



Failure 4. Responding to the attachment

White 1 is a confusing play, but Black can simply connect at 2. If Black uses 2 to connect at 'a', White captures at 2 and Black dies.



Reference. Black is alive

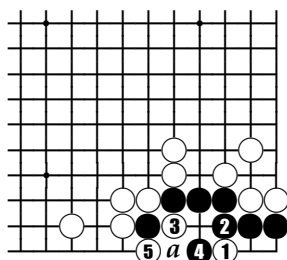
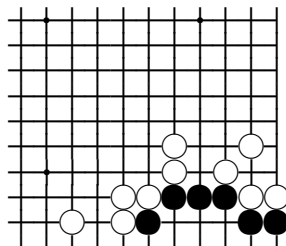
The question here is what to do when Black has an extra liberty as at 'a'.

White tries the placement in 'the center of three stones'; but Black makes an open connection at 2; in answer to White's cut at 3, he can play atari at 4, so there is no way to kill him.

Pattern 11

White to play, Black dies

This is similar to the last pattern, but the situation with the outside liberties of the black stones is different. Because of this, the vital point has become somewhat uncertain, but there certainly is one.

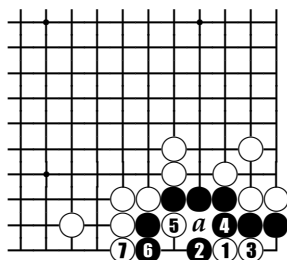


Solution 1

Solution 1. Placement

The placement at White 1 is the vital point. After Black connects at 2, White cuts and captures with 3 and 5 and Black is dead.

There is no margin for Black to use 2 to make the open connection at 'a'. If he does, White cuts at 2 and captures the two black stones in the corner.

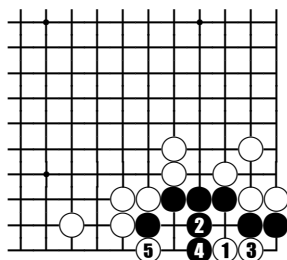


Solution 2

Solution 2. Resistance

In answer to White 1, attaching at Black 2 is powerful; however, crawling at 3 is a good move and after Black 4, White cuts at 5. Though Black descends to 6, White follows at 7, so Black cannot save his two stones.

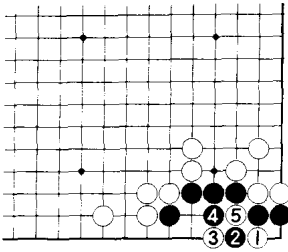
If White cuts immediately with 3 at 5, Black can live by playing 'a'.



Solution 3

Solution 3. Simple

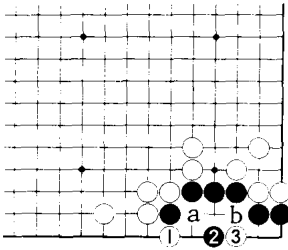
Answering White 1 with Black 2 doesn't really put up all that much resistance. After exchanging White 3 for Black 4, White plays a hane at 5.



Failure 1. Ko

Returning to the beginning, the attachment at 1 is a sharp play, but it's a little bit too tricky. When Black blocks at 2, White has the neat play of atari at 3, but Black defends at 4 and White misses his chance to kill Black outright.

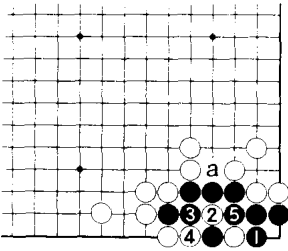
Failure 1



Failure 2. Atari underneath

What about the atari underneath at White 1? The jump to Black 2 turns out to be the correct defense after all. This position, however, does require some caution after White attaches at 3. If Black connects at 'a', White's cut at 'b' will mean sudden death for Black because of the shortage of liberties of the two black stones in the corner.

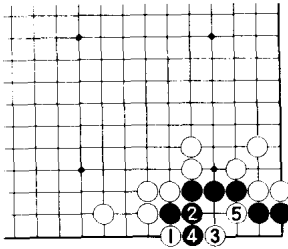
Failure 2



Failure 3. White's shortage of liberties

Continuing from the previous diagram, Black has to block at 1. After White 2, Black 3 and 5 fill in the white liberties and Black can aim to trap two of the White stones. Note that Black has a liberty at 'a'. If this were filled in, Black wouldn't be able to press at 5.

Failure 3



Failure 4. As requested

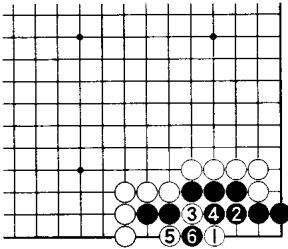
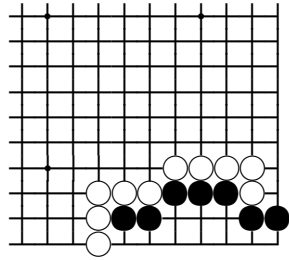
After White's atari at 1, connecting at 2 is exactly what White wants Black to do. White makes the placement at 3 and answers Black 4 by cutting at 5; Black becomes unable to press down because of his shortage of liberties.

Failure 4

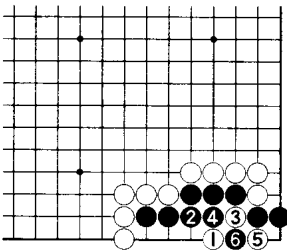
Pattern 12

White to play and make a ko

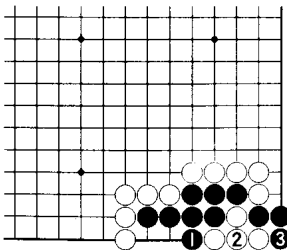
On the left, White has played down to the edge of the board and the position has become somewhat intricate. However, there is only one vital point. If White plays there, a ko naturally follows.



Solution 1



Solution 2



Variation 1

Solution 1. Placement

As shown in the diagram, the placement at White 1 is the vital point. If Black connects at 2, White cuts at 3. When Black plays atari at 4, Black goes all out with 5 and gets a ko.

White's attaching with 3 at 5, trying to connect underneath, ends in failure after Black connects at 3.

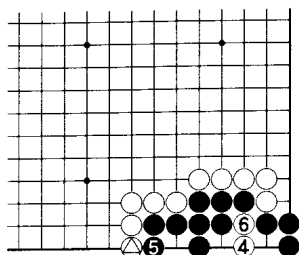
Solution 2. Connecting on the opposite side

In response to White 1, Black can also use 2 to connect on this side. As before, White cuts at 3 and answers Black's atari at 4 with a hane at 5 to make a ko.

Additionally, Black's effort to live unconditionally instead of taking the ko with 6 is shown in the following diagrams.

Variation 1. Capturing four stones

Rather than playing a ko, Black plays atari at 1. White connects at 2 and Black captures four stones with 3, but is he really alive? Consider the next diagram.

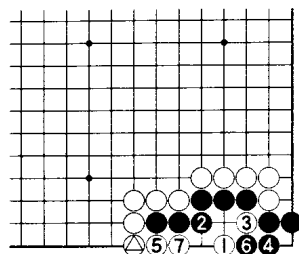


Variation 2

Variation 2. Nowhere to press

To continue, White has the placement at 4. When Black makes an eye with 5, White cuts at 6. Black can't press down on the white stones because of his shortage of liberties. The marked white stone is making its presence felt

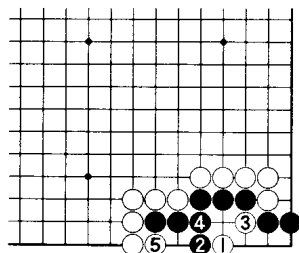
In other words, Black has no choice but to play the ko after all.



Variation 3

Variation 3. False eye

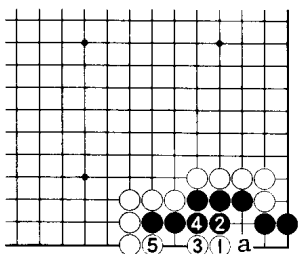
After White 1 to 3, what about play Black 4 in the corner to make one eye? In response, White's answer at 5 and 7 is ironic. Black ends up with a false eye and the marked white stone does its work after all.



Variation 4

Variation 4. Diagonal attachment

Going back to the beginning, let's try answering White's placement by making the open connection at 2. Naturally, White cuts at 3. Black has no choice but to connect at 4, and White pushes at 5, so Black again is unable to press down on White because of his shortage of liberties.



Variation 5

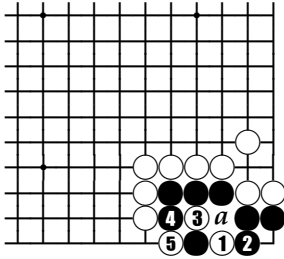
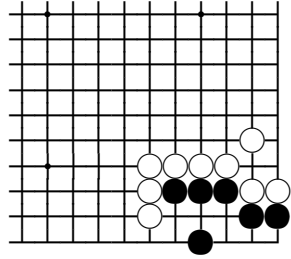
Variation 5. Connection

In the same manner, let's look at Black's answering White 1 with the bump at 2. This time extending to 3 is good enough. After Black 4, White turns at 5 and because of Black's shortage of liberties, White connects his two stones to the outside. Even if Black plays 4 at 'a', White plays at 5 and gets the same result

Pattern 13

White to play, Black dies

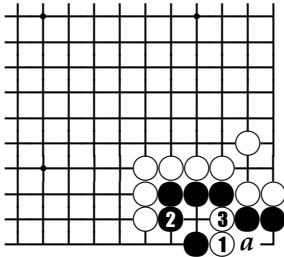
The position has shrunk. It is of the same type as several that have appeared so far. All of Black's outside liberties have been filled in, so he does, after all, die unconditionally.



Solution 1

Solution 1. Shortage of liberties

White 1 is the one and only weak point in Black's shape. If Black answers at 2, capturing a stone with White 3 and 5 is good enough. Black can't press at 'a' to trap the white stones because of his shortage of liberties.

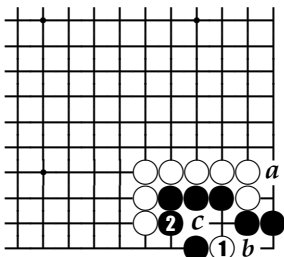


Solution 2

Solution 2. The cut

Even if he resists strongly, with Black 2 here, White has the cut at 3. Once again a shortage of liberties prevents Black from playing atari at 'a'.

If White tries the attachment of 'a' instead of 1, Black makes an ordinary answer at 1 and survives.



Reference

Reference. An extra liberty

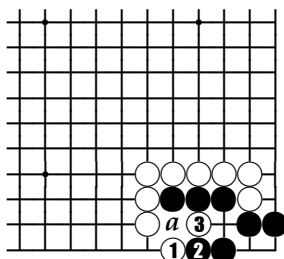
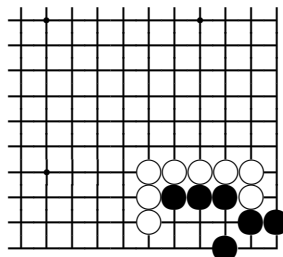
In this case there is an extra liberty at 'a'. Now Black answers White 1 at 2 and is alive. Black can also answer White 1 by blocking at 'b' and, after White's, play Black 2, planning to trap the white stones in their own shortage of liberties.

Ultimately, the existence of outside liberties decides the life or death of the group.

Pattern 14

White to play, Black dies

This pattern is often seen in collections of life and death problems. In this shape as well, cursed with the shortage of liberties of his three stones, the black group dies. However, be careful not to jump to conclusions.

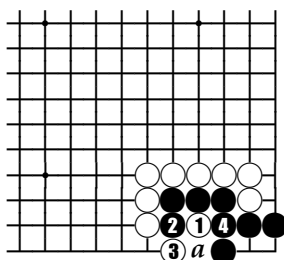


Solution

Solution. Diagonal move

The diagonal move of White 1 has a nice feeling about it. After Black 2, White has the hane at 3. Black can't push in at 'a' because of a shortage of liberties.

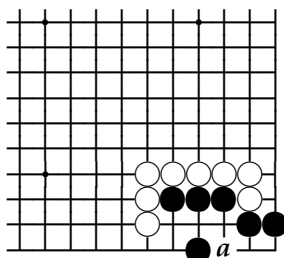
If Black plays 2 at 'a', then White plays 3 and Black's *eye* is still ruined.



Failure

Failure. Careless

At first, the attachment at White 1 might be appealing, but it's a vulgar play and includes an illusion. Black can push at 2 and answer White 3 by connecting at 4. It looks as if White, in the early stages, overlooked the fact that he cannot connect at 'a'.



Reference

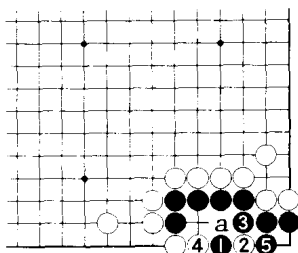
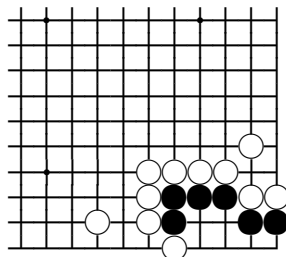
Reference. Making life for Black

If you wonder how Black should play in this position, as a matter of course, he has to jump to 1 here. If he makes the open connection at 'a', he ends up dead as you've already seen.

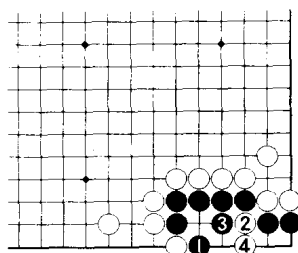
Pattern 15

Black to play and live

This can be considered a practical application of our analysis so far. There is a potential blind spot in this shape, so be sure you read it out accurately to the very end. The various failure diagrams of this pattern are also of interest



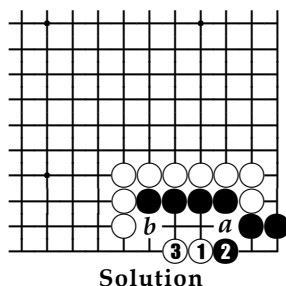
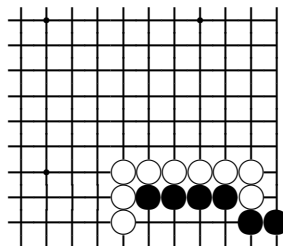
Solution



Pattern 16

White to play, Black dies

This is also a practical-application problem. This time it's White's turn. If you have a good feel for shape you probably won't have any trouble. It's all over if you know where to make the first move.

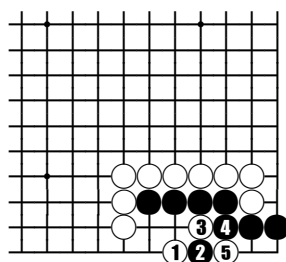


Solution

Solution. Large-knight move

White 1 kills the group at one blow. If Black makes an open connection with Black 2, White connects to the outside at 3; 'a' won't become an eye for Black, so there are no more problems here.

If White turns at 'b' instead of 1, the jump to Black 1 is the vital point.

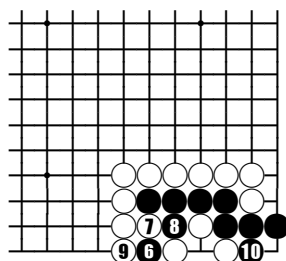


Failure 1

Failure 1. Small-knight move

If White slides in with the small knight's move at 1, all of a sudden the variations become complicated.

Black's attachment at 2 is his strongest response. White, too, has no choice but to continue his attack with 3, but what happens after Black blocks at 4? After White 5...



Failure 2

Failure 2. White is trapped

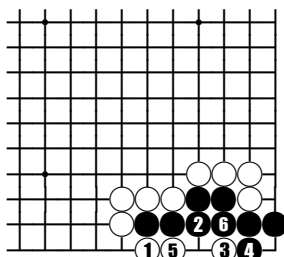
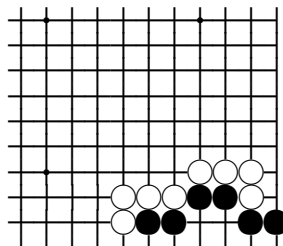
Black attaches at 6. Up to 10, Black traps two white stones because of their own shortage of liberties.

The conclusion is that, the small-knight move allows Black to survive.

Pattern 17

Black is alive

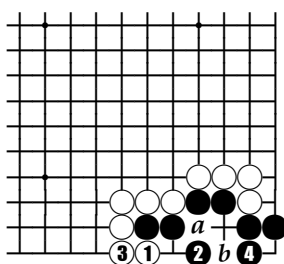
If you compare this to the first comb shape, the shape has become a little bit smaller. This is a position which comes up often in actual play. Black is alive here even if he plays elsewhere.



Variation 1

Variation 1. Hane

If White decides to try and capture the black group, he will play the hane at White 1, but Black simply connects at 2. In answer to White's placement at 3, Black 4 is important. White's crawling at 5 produces a scary position for an instant, but Black connects at 6 and captures the White stone at 3.

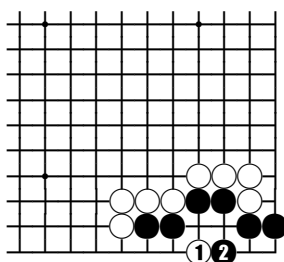


Variation 2

Variation 2. Perverse

Black can also answer White 1 with the open connection at 2. Connecting on the bottom with 3 is a nasty play: Black must pay close attention. Playing either at 4 or at 'a' is a cool response.

If Black plays 4 at 'b', White throws in at 'a' and kills him.



Variation 3

Variation 3. Placement

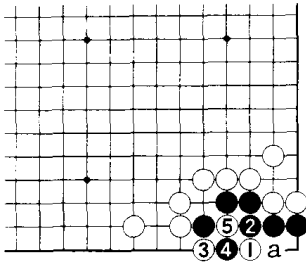
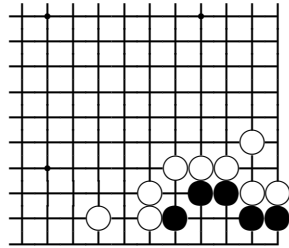
White's placement at 1 is a confusing play but if Black makes the open connection at 2, he has nothing to worry about.

If White makes his placement at 2, Black also makes an open connection, this time at 1, and White has no answer.

Pattern 18

White to play and make a ko

It looks as if Black is alive, but his shortage of liberties gives White a chance. White has two options for his first move, but the technique is exactly the same.

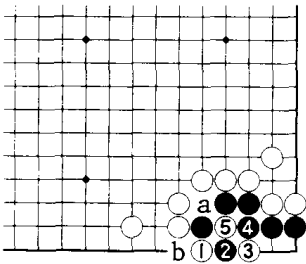


Solution 1

Solution 1. Placement

White's placement at 1 is the vital point. Black has no choice but to connect at 2, so White tries to connect underneath with 3. Black again has no option but to throw in at 4 to make a ko.

If Black plays 2 at 4, White cuts at 2 and Black can't play at 'a' because of his shortage of liberties.

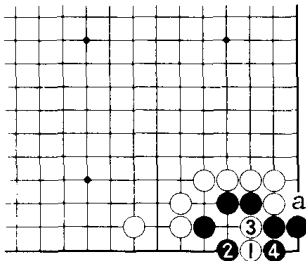


Solution 2

Solution 2. Hane

If White starts with the hane at 1, he ends up with the same ko. When Black blocks at 2, White plays atari at 3, and Black has no choice but to defend at 4 after all.

In addition to White 3, the atari at 'a' looks as if it might be effective, but Black would capture at 'b' and White can do nothing.



Reference

Reference. An open liberty

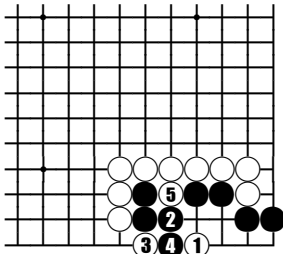
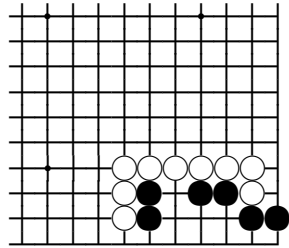
Because Black has an extra liberty at 'a', the story is different. In answer to White 1, Black's diagonal attachment at 2 is good; after White 3, Black can block on this side with 4.

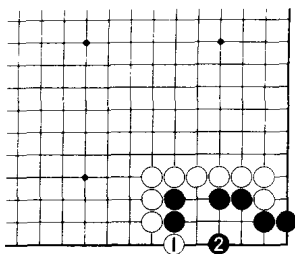
In other words, this shape is unconditionally alive.

Pattern 19

White to play, Black dies

As you can see, the position is thin, but if you don't give it careful consideration, Black will be able to live. It's a matter of where to put the first stone, but there is only one vital point.



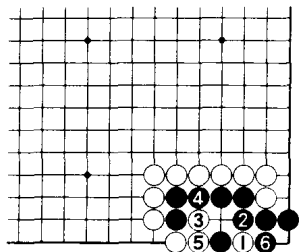


Failure 2

Failure 2. The vital point

Answering White 1 with the jump to 2 is a good move, as this turns out to be the vital point after all.

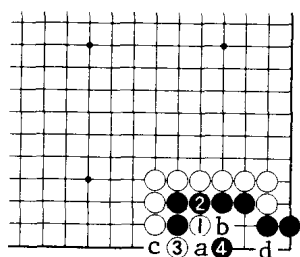
Well, in this position is Black alive or not? We have to pursue this a little bit further.



Failure 3

Failure 3. Alive

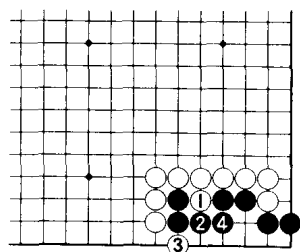
If any move will work, it's probably the attachment at White 1. After Black 2, White plays atari at 3, but Black connects at 4 and is okay. White 5 is met by a black capture at 6 and Black just manages to make eyes. Even if White plays 3 at the atari of 5, Black answers at 6 and gets the same result. In this position, Black is alive.



Failure 4

Failure 4. Vulgar

The belly attachment at White 1 has to be called a vulgar move. After Black 2 and White 3, the jump to Black 4 is important. After this, Black lives with White 'a', Black 'b', White 'c', Black 'd'. If Black uses 4 to play atari at 'b', White plays a hane at 4 and gets a ko, so be careful.



Failure 5

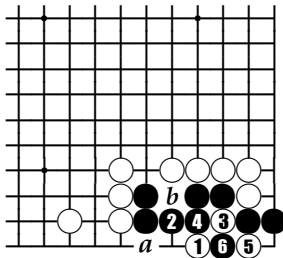
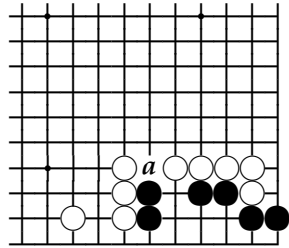
Failure 5. An awful play

Pushing down with White 1 is an even worse way to play. Black defends at 2 and the shape is exactly the same as in Pattern 17, so it's a living shape. If White plays a hane at 3, Black connects at 4.

Pattern 20

White to play and make a ko

This is very similar to the preceding pattern, except that Black has an extra liberty at 'a'. Even so, if you take advantage of the power of the vital point, there is room here to force a ko.

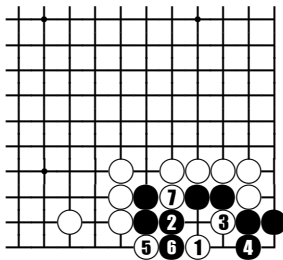


Solution

Solution. The cut

White 1 is still the vital point. After Black 2, this time White has the cutting tesuji at 3. Black 4 is answered by a white hane at 5, producing a ko aimed at creating the four-space big eye.

Even if Black descends with 2 at 'a', White 'b', Black 2, and White 3 produce the same ko.

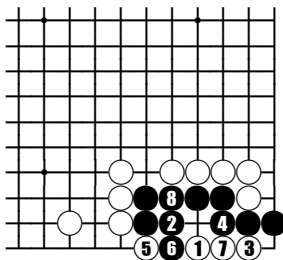


Variation

Variation. Trapping Black

After White 1 to 3, Black 4 provides the strongest resistance, but White 5 and 7 are well-timed. White is just able to trap Black in a shortage of liberties.

If Black plays atari with 6 at 'a', White connects at 6 and, even if Black is allowed to capture one stone, it makes only a false eye.



Failure

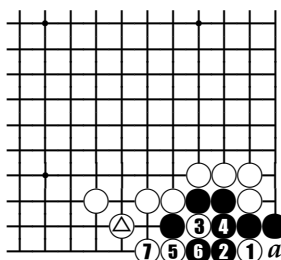
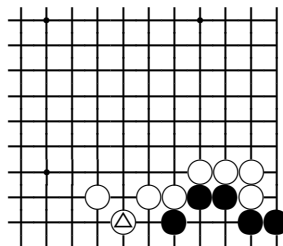
Failure. Seki

After White 1 and Black 2, you might want to attach at 3, but connecting at Black 4 hits the vital point. Even if White plays 5 and 7 aiming at a three-space big eye, Black connects on the perimeter and all White gets is a seki.

Pattern 21

White to play, Black dies

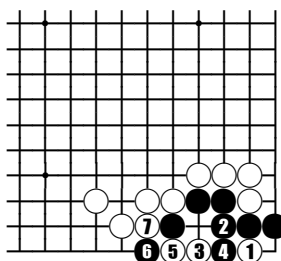
You have to force the marked white stone to do more than the ordinary. If the very first stone hits the vital point, Black's weak spot will automatically be exposed.



Solution 1

Solution 1. Turn under

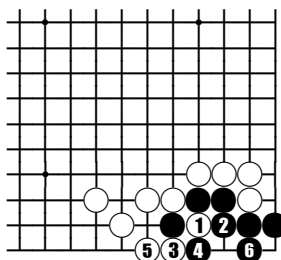
White 1 occupies the 2-1 point. After Black 2, White cuts at 3 and turns under at 5. Up to White 7, the marked white stone has performed beautifully. Playing White 3 at the atari of 6 might also occur to you, but Black captures at 'a' and the move fails.



Solution 2

Solution 2. Placement

If Black answers the attachment at White 1 by connecting at 2, White makes the placement at 3. Black 4 is met by White 5, and with 7 this becomes a false eye. Additionally, if Black blocks with 4 at 5, White connects at 4 and gets a three-space big eye.



Failure

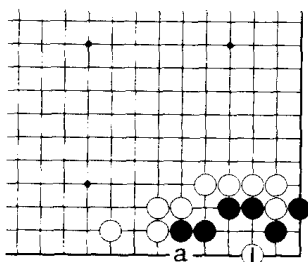
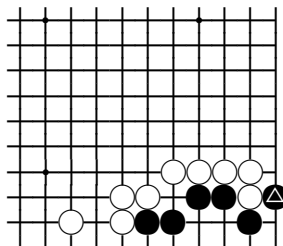
Failure. Lack of preparation

If White begins by cutting at 1 and then turns under at 3, after Black 4 and White 5, Black is able to make two eyes by playing at 6. Although the tesuji of White 1 and 3 is what you're aiming at, some preparation is necessary first.

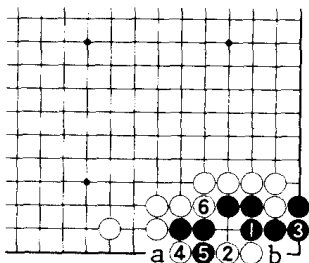
Pattern 22

White to play, Black dies

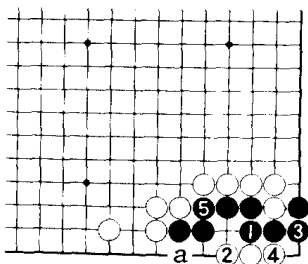
Making do with the hane of the marked black stone is not the same as the real thing. How should White take advantage of Black's thinness? This is a tough problem finding the first move may be quite difficult.



Solution



Solution 2



Failure 1

Solution 1. Placement

The placement of White 1 is at the vital point Recognizing that this is also where Black would play if he were going to try and live here is a clue to locating it For example, if White were to hane with 1 at 'a', Black would make the open connection at 1 and live.

For the possible variations, consider the diagrams which follow.

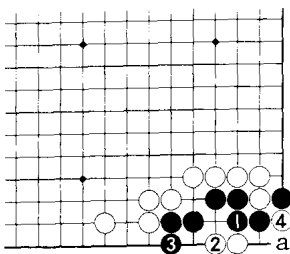
Solution 2. An important hane

If Black answers White's placement by connecting at 1, naturally, White extends to 2. If Black continues by connecting at the bottom with 3, the hane at 4 and atari at 6 are an important sequence. After this, if Black captures at 'a', White extends again to 'b' and makes a three-space big eye.

Failure 1. Unprepared

After Black 1 and 3, extending to 4 immediately has to be called careless. By taking a breather at this point, you allow him to play at 5 and live.

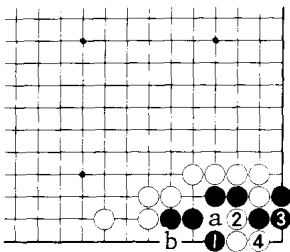
Black can also live by descending to 'a' instead of 5.



Solution 3

Solution 3. Straightforward

After Black 1 and White 2, if Black descends at 3, living becomes unlikely. With the White throw-in at 4, Black dies. Even if Black captures at 'a', White can play elsewhere, because the shape is dead as it stands.

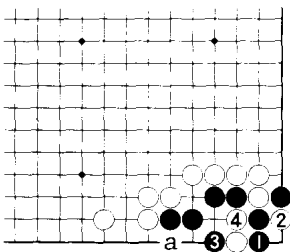


Solution 4

Solution 4. Diagonal Attachment

In response to White's placement, the diagonal attachment of Black 1 looks like a strong way to defend. However, White cuts at 2 and Black is unable to survive. White answers Black 3 by turning at 4. Black must continue by playing at 'a', so there's no time for him to play at 'b'.

If Black plays 3 at 4, White plays at 3.

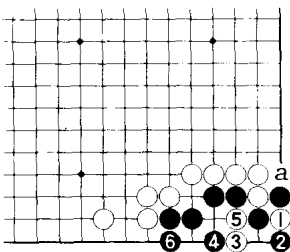


Solution 5

Solution 5. Throwing in

If Black blocks at 1, White throws in at 2. When Black plays 3, White cuts at 4 and in this case as well, Black doesn't get to play at 'a' since his two stones are in atari.

Note that if Black plays 1 at 2, White cuts at 4, and we get a shape similar to the one in the previous diagram.



Failure 2

Failure 2. Too late

Starting with the throw-in of White 1 may look strong, but it's a reading error. When Black plays 2, it's too late for White to make the placement at 3. With 4 and 6, Black manages to live.

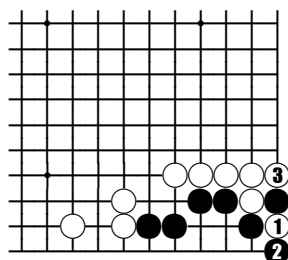
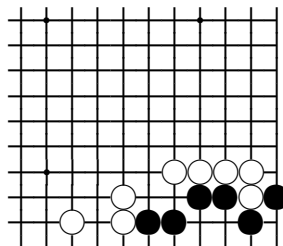
Having played at 1, White has no choice but to block at 'a' and start a ko. Compare this with the following pattern.

Pattern 23

White to play and make a ko

This is similar to the previous pattern, but to see what is different, you should turn the page back and compare them.

There is no way to kill this shape unconditionally, so making a ko will be a success.

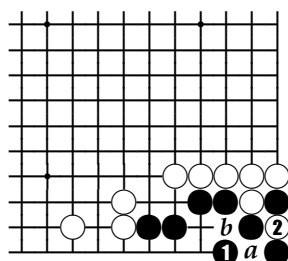


Solution 1

Solution 1. Throw in

This time, as you might expect, the throw-in at White 1 is the correct move. Black is forced to capture at 2 and White then blocks with 3.

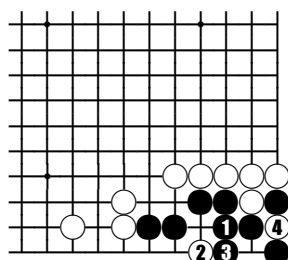
After this, what type of ko it becomes depends on how Black defends, so let's take a look at some of the variations.



Solution 2

Solution 2. Two-step ko

After the last diagram, the open connection at 1 is Black's best move. White captures at 2 and starts a ko fight, but even if he wins this ko, White cannot end the ko fight. After White 'a', he still needs to capture at 'b'. In other words, it's a two-step ko.



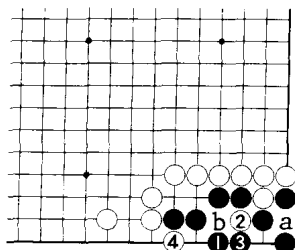
Variation 1

Variation 1. Tight connection

If Black connects tightly at 1, naturally White makes the placement at 2 After Black 3, White captures at 4 and makes ko.

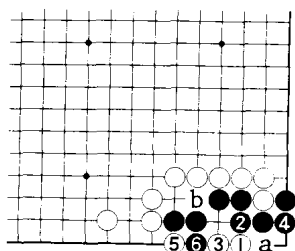
This is a direct ko, so making the two-step ko as in the previous diagram is more favorable for Black.

Variation 2. The open connection



Variation 2

The open connection at Black 1 is a move which at first glance you might think makes a lot of eye shape. However, the cut at White 2 is the vital point, and when Black plays 3, White answers with the hane at 4. Once again, there is no way to live unconditionally. Since Black can't simply connect at 'a', a ko fight starts after Black 'b', White 'a'.

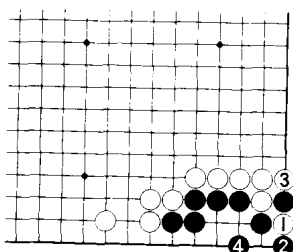


Failure

Failure. An open liberty

In Pattern 22, the solution was the placement at White 1. In this case, however, even if you follow the same sequence as before up to 6, Black manages to live. If White continues with 'a', Black plays 'b'.

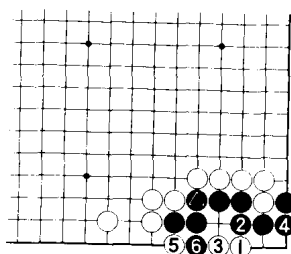
The status of Black's outside liberties is different than in the last pattern.



Reference 1

Reference 1. Same type

Once again we've changed the shape slightly. In this case as well, White forces a ko by throwing in at 1. After Black 2 and White 3, once again the hanging connection at 4, producing a two-step ko, is Black's best move.



Reference 2

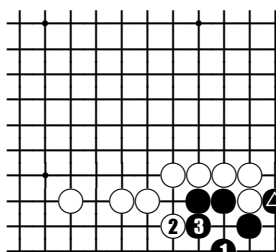
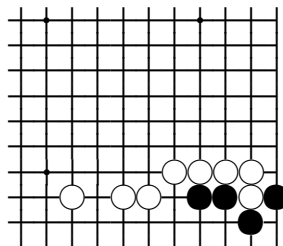
Reference 2. Alive

Even though the placement at White 1 is at the vital point, after Black 2 and White 3, Black will connect at 4 and White falls just short. Having the marked black stone in place is a big plus for Black.

Pattern 24

Black to play and live

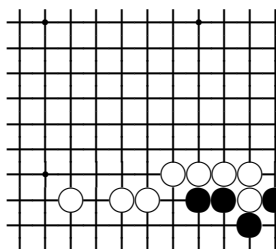
This is a relatively easy class of life and death problems, but if you don't exercise some caution with the first move, the large number of variations might make you feel as if you're lost in a maze.



Solution 1

Solution 1. Open connection

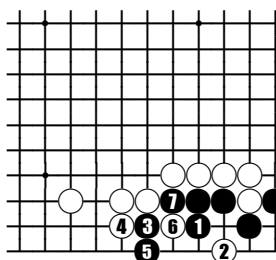
The open connection at Black 1 is the vital point for making eye shape. As long as you know this move, there is nothing particularly difficult which follows. In answer to White's diagonal move at 2, Black defends at 3 and very efficiently makes two eyes. The role of the marked black stone is particularly important.



Solution 2

Solution 2. White's attachment

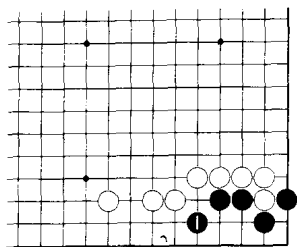
White can't hope to achieve anything unless he attaches with 2, but Black counters with 3. White ataris at 4, but Black gets two eyes with 5.



Failure 1

Failure 1. Turning

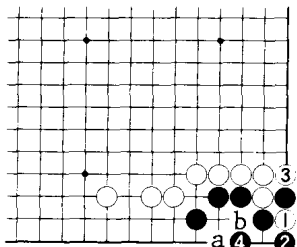
If Black could turn at 1 and live, then there wouldn't be any problem here, but White makes the placement at 2 and Black cannot make two eyes. Black tries to expand his eye shape to the maximum extent with Black 3 and 5, but White responds with 6 and 8 and it doesn't work.



Failure 2

Failure 2. Diagonal play

What happens if Black makes the diagonal play at 1, trying to expand his base? Figuring out how White should attack this shape is also difficult. The final result is a ko, but if White plays poorly, Black will be able to live. How should White play? The other patterns of this type should provide you with reference material.

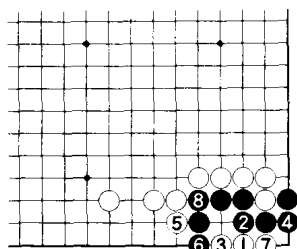


Failure 3

Failure 3. Ko

White's throw-in at 1 produces a ko. The fact that Black 4 produces a two-step ko has been explained previously.

If Black makes the open connection at 'a' instead of 4, White cuts at 'b' and once again gets a ko.

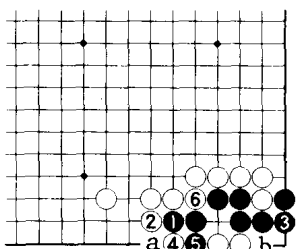


Failure 4

Failure 4. Placement

The placement at White 1 is at the vital point, but it doesn't work with this shape. After Black 2 and White 3, connecting at Black 4 is a good move. Even if White aims to make a big eye with White 5 to 7, Black connects at 8 and all White gets is a seki.

Instead of connecting at 4...



Failure 5

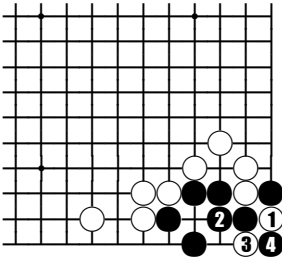
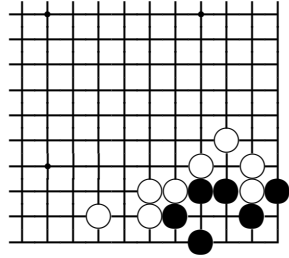
Failure 5. Sudden death

Crawling with Black 1 is suicidal. The poor move of Black 1 reduces Black's own liberties. Now, after Black 3, three black stones can be placed in atari with White 4 to 6. When White plays atari at 6, Black captures at 'a', then White 'b' produces a three-space big eye.

Pattern 25

White to play and make a ko

In this shape, deciding where White should make his first move can be a little confusing. You need to return to your basic approach to life and death problems. You should also be careful about how Black will defend.

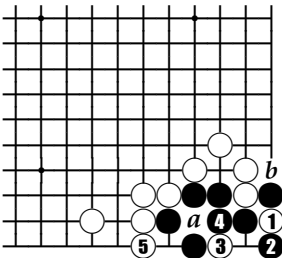


Solution

Solution. Throw-in

One of the fundamentals of life and death is reducing from the outside. The throw-in of White 1 adheres to that principle. For Black, connecting solidly at 2 is the best response, then the hane at White 3 yields a ko.

If White plays 1 at 2, Black will connect at 1 and live. Once again, 1 is the vital point.

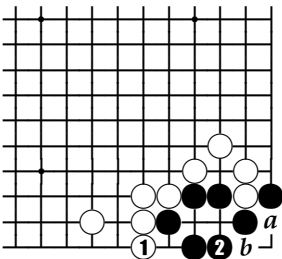


Variation

Variation. Unconditional

After White 1, capturing at Black 2 is a defensive mistake. White's attachment at 3 is a good move and after Black 4, White descends to 5, destroying Black's eye at 'a'.

Should White play 3 at 'b', Black connects at 4 and lives.



Failure

Failure. Descent

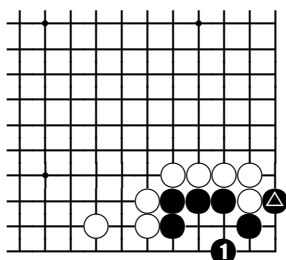
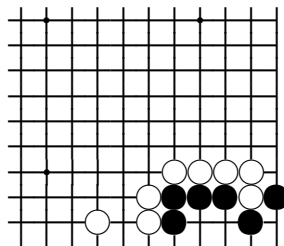
The descent to 1 is often a good move, but in this case it lets Black play at 2 and make two eyes. If instead of 2, Black connects at 'a', White can attach at 'b', producing a sudden death for Black, so he must also be careful.

Additionally, if White uses 1 to attach at 2, Black plays at 'b' and lives.

Pattern 26

Black to play and live

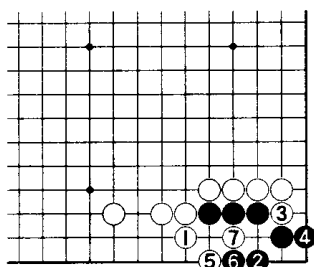
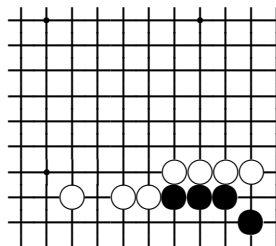
You first need to determine whether or not you can live by simply securing the base that you have. If this won't allow you to live, then you have no choice but to search out the vital point for making eye shape.



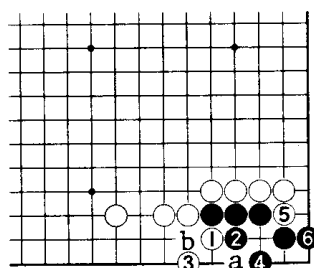
Pattern 27

White to play, Black dies

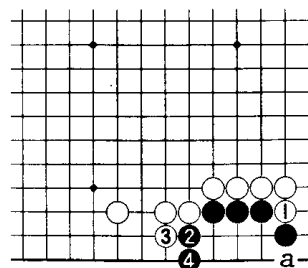
Simply think about this shape as if Black had just played the stone on the 2-2 point to get life. If you stay calm and don't get flustered, you'll be able to figure out how to make this into a dead shape.



Solution



Failure 1



Failure 2

Solution. Descent

Descending to 1 is good enough. Black's open connection at 2 is the key point for making *eye* shape, but after White 3 and Black 4, the diagonal move at White 5 becomes a good move. In answer to Black 6, White can turn in at 7. The shortage of liberties of the three black stones proves to be fatal.

Failure 1. Doing Black a favor

The hane of White 1 is an overplay. This makes Black's original play on the 2-2 point into a good move. The open connection of White 3 is the only follow-up. After Black 6, a ko follows with White 'a'. If instead of 3, White connects tightly at b', he can't even get this ko.

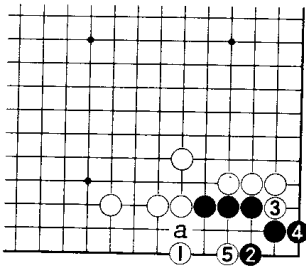
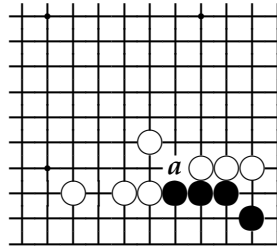
Failure 2. Turning

White 1 is also looks strong, but Black answers with a hane at 2 and a descent to 4, a shape which cannot be killed unconditionally. As we saw in the very first pattern of this section, the best White can do now is attach at 'a' to get a ko.

Pattern 28

White to play, Black dies

Because Black has an extra liberty at 'a', you can't proceed as in the previous pattern. However, as before, if it's White's turn to play, Black dies. What kind of procedure does White have available to him? The first move is the key.

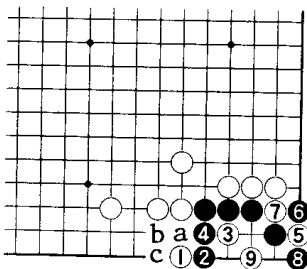


Solution 1

Solution 1. Jump

The jump down to the first line is a good move here. After Black 2 to 4, White attaches at 5. If White 1 were at 'a', then White 5 wouldn't work.

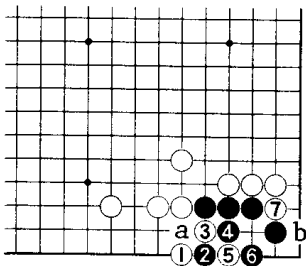
Note that the jump to White 1 would have worked in the previous pattern as well, but we weren't ready to discuss it yet.



Solution 2

Solution 2. Resistance

After White 1, Black 2 is a strong answer, so White has to be cunning as well. The attachment at White 3 prevents further resistance, since after Black 4, White 5 to 9 kill the black group. In the middle of this sequence, should Black play 4 at 'a', White answers at 'b', Black 'c', and then White 5 gives the same result



Failure 8: ko

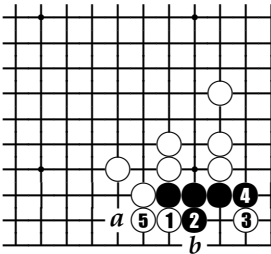
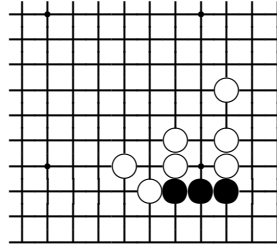
Failure. Tricked

After White 1 and Black 2, if White plays 3, he has been caught in Black's trap. With 4 and 6, Black is able to make eye shape and with Black 8 he gets a ko. White can yield the ko by connecting at 'a', then start the ko fight again after Black 'b'.

Pattern 29

White to play, Black dies

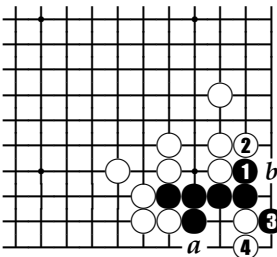
It looks like there are a number of alternatives for the first move, but there is only one play which eliminates all the aji. Actually, there are a number of variations, but the trick is to read them out all the way to the end.



Solution 1

Solution 1. Begin with a hane

The first move is White's hane at 1. After Black 2, White 3 is a move that Black must answer, whether he wants to or not. When White connects at 5, it's a dead shape. The continuations are examined below.

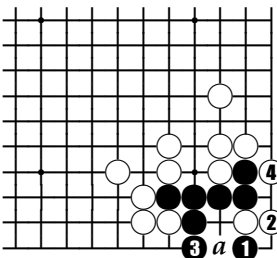


Solution 2

Solution 2. Miai

Continuing from the previous diagram, if Black plays 1 and 3, White descends to 4, making miai out of connecting underneath at 'a' and the hane at 'b'.

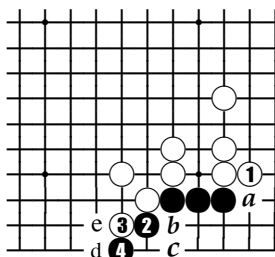
Instead of 3...



Failure

Solution 3. Preventing a ko

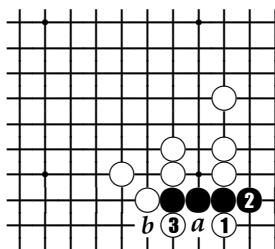
The attachment at Black 1 here probably provides the strongest resistance, but White can simply descend to 2 and answer Black 3 with a hane at 4, killing the group. If instead of 2, White plays at 'a', Black plays 2 and gets a ko.



Failure 1

Failure 1. An irritating ko

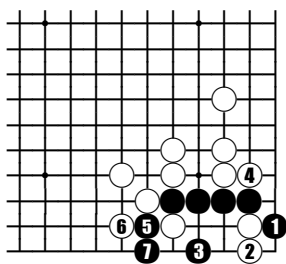
White 1 here is defective. If Black plays 'a', White can simply play 'b', but with 2 and 4 Black gets the chance to persevere with ko. If White cuts at 'b', Black plays 'c'. If instead White blocks at 'd', Black plays 'c' and can aim at the cut at 'e'. Also, if Black simply descends to 'b' instead of 2, it creates a shape with lots of bad aji.



Failure 2

Failure 2. Beginning with the placement

What about beginning with the placement at White 1? Black has no choice but to play 2. White continues with the hane at 3 and if Black blocks at 'a' and White connects at 'b', this reverts to the solution. Unfortunately Black won't play at 'a', because he has a better move. Namely —

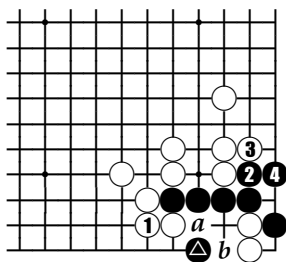


Failure 3

Failure 3. Black gets a cut

Simply playing a hane at 1 is good enough. When White descends to 2, the jump to Black 3 is a good move. When White blocks at 4 to prevent an eye on that side, Black's cut at 5 is successful and the single white stone ends up captured.

Instead of White 4...



Failure 4

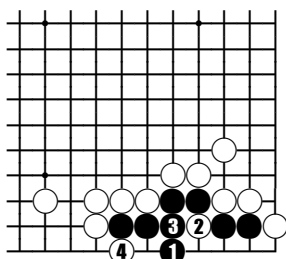
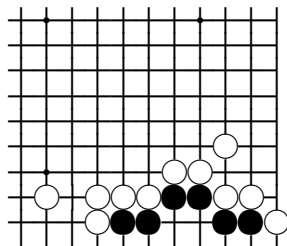
Failure 4. There's no connection

If White connects at 1, Black adds an eye with 2 and 4. After this, even if White pushes in at 'a', Black plays 'b' and the two stones in the corner cannot be rescued. I'm sure you can see why the marked black stone is such a good move.

Pattern 30

Black is dead

This is a smaller version of the comb pattern, with a base. The fact that all of the outside liberties of this shape have been filled in is a major shortcoming. No matter how Black plays, he cannot live. Lets first investigate this claim.

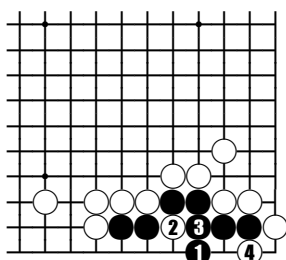


Variation 1

Variation 1. Open connection

Black 1 appears to be the likely vital point of this position. However, White first inserts a cut at 2 and when Black answers at 3, follows up with hane at 4 and Black is dead.

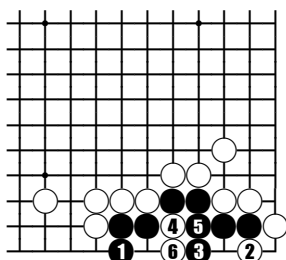
For White, too, the cut at 2 is important. If he simply plays a hane at 4, Black will play at 2, making an eye and managing to survive.



Variation 2

Variation 2. The same result

Next lets try making an open connection on the right side at Black 1. The logic is the same. White cuts with 2, then plays a hane at 4 and Black is dead.



Variation 3

Variation 3. Descent

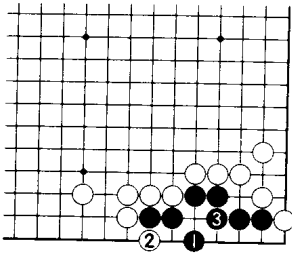
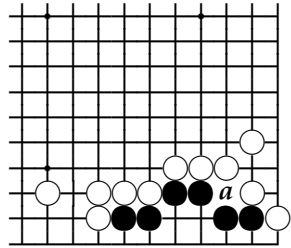
Finally, let's try descending to 1, expanding the black base. In this case, White plays hane at 2. In answer to Black 3, White 4 and 6 are good enough. Instead of 2, cutting immediately at 4, Black 5, and White 6 also kills the group.

If Black plays 1 at 2, then White 1, Black 6 and White 5 follow.

Pattern 31

Black to play and live

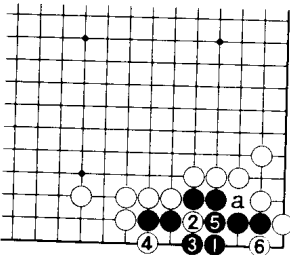
Because he has an open liberty at 'a', the Black group can be saved. The question is how to connect that open liberty to life for the group.



Solution

Solution. Open connection

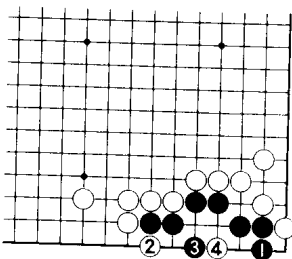
Making the open connection on the left side at 1 is good enough. When White plays 2, Black 3 secures two eyes. Even if White plays 2 inside at 3, Black descends to 2 and has no trouble whatsoever



Failure 1

Failure 1. Opposite direction

What about making the open connection on the right side at Black 1? White will throw in a cut at 2 and, since Black has no choice but to answer at 3, make use of the atari at 4 and hane at 6 to kill the group. In short, the open connection of Black 1 doesn't make use of the open liberty at 'a'.



Failure 2

Failure 2. Descent

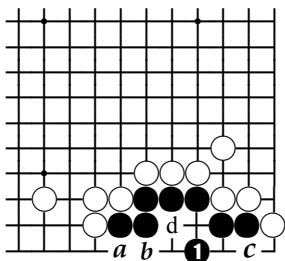
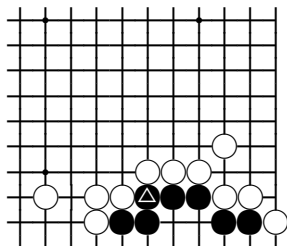
Lets try descending to Black 1. Unfortunately, with a white hane at 2, Black is easily killed. White can answer Black 3 with the attachment at 4.

Also, descending on the other side at 1 is met by a white placement at 3 and there is no way for Black to live.

Pattern 32

Black to play and live

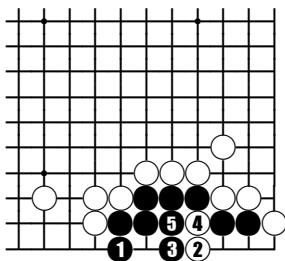
The black position has been reinforced with a connection at the marked black stone. There is more than one way to live. However, there are also variations in which a shortage of liberties can result in sudden death, so you need to be careful.



Solution 1

Solution 2. No chinks

The open connection of Black 1 gives an unarguably living shape. If White continues with 'a', Black can simply block at 'b'. Also, in response to White 'c', Black 'd' makes certain of two eyes, f d like you to confirm for yourself that descending to 'a' instead also makes Black alive.

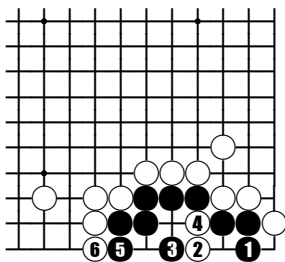


Solution 2

Solution 2. Descent

One more way of living is the descent of Black 1. In response to White 2, the diagonal attachment at 3 is good and even if White cuts at 4, Black can connect at 5.

Even if White plays 2 at 3, Black again makes a diagonal attachment, this time at 2, and is alive.



Failure

Failure. Shortage of liberties

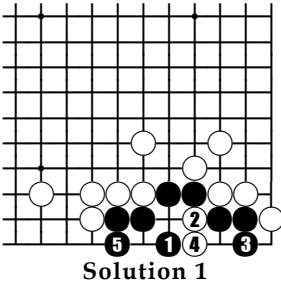
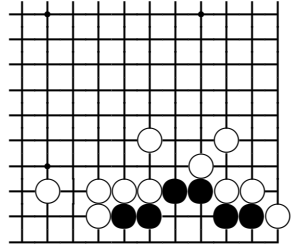
What about the descent to Black 1 here? White makes the placement at 2 and this time there is trouble. In answer to Black 3, White cuts with 4 and after Black secures an eye at 5, blocks at 6. Black's shortage of liberties proves fatal.

Additionally, when Black makes the open connection with 1 at 3, White cuts at 4 and Black is dead.

Pattern 33

Black to play and live

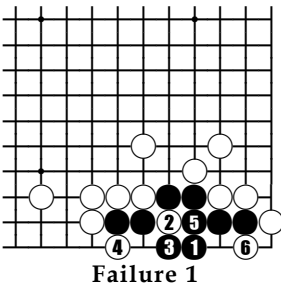
This time Black has an open liberty on the roof of his shape. This liberty doesn't seem to make much of a difference, but in fact it is very relevant. This pattern is a nice little life and death problem.



Solution. White can't come in

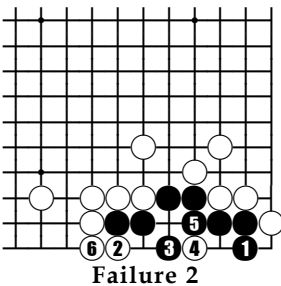
Black makes the open connection on the left side at 1. When White cuts at 2 it looks as if Black is going to die, but Black has the descent at 3 to allow him to narrowly escape. When White plays 4, Black descends at 5. White can't push in at 'a'.

Playing Black 3 at 4 lets White hane at 3 and Black dies.



Failure 2. The cut

The open connection of Black 1 is in the opposite direction. You probably remember from before that White will cut at 2, so Black dies. The sequence continues up to White 6. Note that in the middle of this sequence, Black cannot use 3 to descend at 4.



Failure 2. Descent

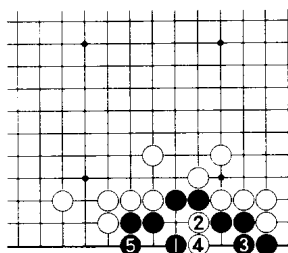
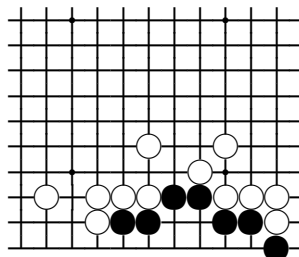
If Black begins with the descent at 1, White will play a hane at 2, then answer Black 3 by attaching at 4.

Black also dies if he uses 1 to descend at 2, since White answers with the placement at 3.

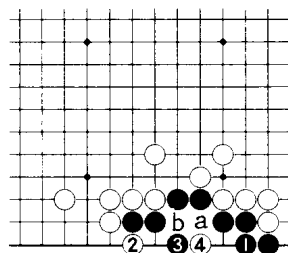
Pattern 34

Black to play and live

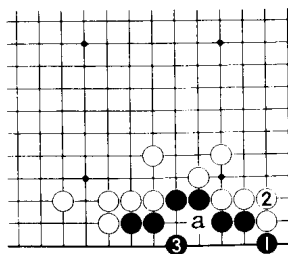
This shape is similar to those you've seen thus far, but the entire position has been moved one space to the left. In addition, note that Black also has played a hane in the corner. In this case as well, the peculiar characteristics of the corner make themselves felt, so Black can live.



Solution



Failure



Reference

Solution. The same technique

Just as in the last pattern, the solution is to make the open connection at Black 1 here. When White cuts at 2, connecting at Black 3 is probably something of a blind spot Black answers White 4 by descending to 5, and the trick is that White has no way to push into the corner.

Failure. Connecting at the base

If Black first connects at 1, White will play a hane at 2 and kill him.

Furthermore, White can also play 2 at 4, but he must be very careful, because when Black answers at 3, if White cuts at 'a', Black will play at 2 and live. If Black begins with 1 at 4, White answers at 'b'.

Reference. The lifeline

When this position arises, Black 1 becomes the lifeline. If Black forgets to make the forcing play at 1 and simply makes the open connection at 3, White will cut at 'a'. Now a black play at 1 comes too late. Black is dead.

Books from the Ishi Press

- ** G2: *Basic Techniques of Go* **Nagahara Yoshiaki
and Haruyama Isamu**
- *** G6: *Strategic Concepts of Go* **Nagahara Yoshiaki**

Elementary Go Series

- ** G10: *Volume 1- In the Beginning. The Opening
in the Game of Go* **Ishigure Ikuro**
- ** G11: *Volume 2 - 38 Basic Joseki* **Kosugi Kiyoshi and
James Davies**
- ** G12: *Volume 3 - Tesuji* **James Davies**
- ** G13: *Volume 4 - Life and Death* **James Davies**
- *** G14: *Volume 5 - Attack and Defense* **Ishida Akira and
James Davies**
- *** G15: *Volume 6 - The Endgame* **Ogawa Tomoko and
James Davies**
- ** G16: *Volume 7 - Handicap Go* **Nagahara Yoshiaki
and Richard Bozulich**
- ** G17: *Kage's Secret Chronicles of Handicap Go* **Kageyama Toshiro**
- *** G18: *Test Your Go Strength* **Miyamoto Naoki**
- **** G19: *Breakthrough to Shodan* **Miyamoto Naoki**
- **** G21: *Dictionary of Basic Joseki, Vol.1*
- **** G22: *Dictionary of Basic Joseki, Vol. 2*
- **** G23: *Dictionary of Basic Joseki, Vol. 3* **Ishida Yoshio**
- **** G24: *Enclosure Josekis* **Takemiya Masaki**
- *** G25: *Appreciating Famous Games* **Ohira Shuzo**
- *** G26: *Direction of Play* **Kajiwarra Takeo**
- *** G27: *Kato's Attack and Kill* **Kato Masao**
- ** G28: *Lessons in the Fundamentals of Go* **Kageyama Toshiro**

**	G10: <i>Volume 1- In the Beginning. The Opening in the Game of Go</i>	Ishigure Ikuro
***	G29: <i>Reducing Territorial Frameworks</i>	Fusjisawa Shuko
*	G30: <i>An Introduction to Go</i>	James Davies and Richard Bozulich
**	G31: <i>The Second Book of Go</i>	Richard Bozulich
***	G32: <i>The Power of the Star Point. The Sanren-sei Opening</i>	Takagawa Shukaku
***	G33: <i>The Chinese Opening. The Sure-Win Strategy</i>	Kato Masao
***	G34: <i>Understanding Moyo and Influence</i>	Ishida Yoshio
***	G35: <i>The Great Joseki Debate</i>	Honda Kunihisa
**	G36: <i>An Introduction to Opening Theory</i>	Otake Hideo
*	G40: <i>The Go Players Almanac</i>	
*	G41: <i>The Magic of Go</i>	Cho Chikun
***	G44: <i>The 3-3 Point. Modern Opening Strategy</i>	Cho Chikun
***	G45: <i>Positional Judgment High-Speed Game Analysis</i>	Cho Chikun
****	<i>Invincible: The Games of Shusaku</i>	
*	<i>Graded Go Problems for Beginners, 1</i>	Kano Yoshinori
*	<i>Graded Go Problems for Beginners, 2</i>	Kano Yoshinori
**	<i>Graded Go Problems for Beginners, 3</i>	Kano Yoshinori
**	<i>Graded Go Problems for Beginners, 4</i>	Kano Yoshinori
*	Beginner's level	
**	Elementary level	
***	Intermediate level	
****	Advanced level	

Other Oriental Strategy Games

S1: Shogi for Beginners *

by John Fairbairn

S4: Chinese Chess for Beginners

by Samuel H. Sloan

S5: Mah Jong - One Step at a Time *

by Alain Gelbman

Free catalog of books currently in print, game equipment and game software available on request.

In North America write to:

ISHI PRESS INTERNATIONAL

76 Bonaventura Drive, San Jose, CA 95134

Tel. 408-944-9900 FAX 408-944-9110

In Europe write to:

ISHI PRESS INTERNATIONAL, LTD.

20 Bruges Place, London NW10TE, UK

Tel. 071-284-4898 FAX 071-284-4899